



iMac (20-inch Early 2008)

April 28, 2008

 Apple Inc.

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Manual Updates

Product Introduced April 28, 2008

New images, screws, and updated text were added to the following sections:

Take Apart

- Battery
- AirPort
- Bluetooth
- LCD Display
- LCD temp sensor cable
- LVDS display cable
- Right speaker
- Optical drive fan
- Optical flex cable
- DC, power supply/SATA/inverter cable
- Logic board
- Audio board

Troubleshooting

- General Information:
 - [Apple Hardware Test \(AHT\) error code table](#) was added that lists the code and the suspect part
 - [Logic Board Sensor and Fan Locators photo](#)
 - Diagnostic LEDs: new photo of LEDs
 - Added Cleaning Tools for the LCD and Glass section
 - Added LensPen Cleaning Tool information
- Symptom Charts:
 - Added new troubleshooting sections called [Wireless Issues](#) and [Additional Wireless Topics](#) to help troubleshoot wireless keyboards and mice
 - Added a new symptom: Power Issues-->[System that intermittently shuts down or restarts unexpectedly](#)
 - Updated symptoms throughout for clarity, removed irrelevant links

Exploded View

- New part numbers were added to reference this iMac model





Take Apart
iMac (20-inch Early 2008)



General Information

Product View



What's New

The iMac (20-inch Early 2008) computer has the same overall look as the previous iMac. The big differences are the upgraded processor (Intel Penryn chip) and the faster RAM speeds.

New features:

- 2.4 or 2.66 GHz Intel Core 2 Duo processors
- 1066 MHz front side bus
- 2 GB and 4 GB memory options, PC2-6400 (800 MHz) DDR2, 4 GB max
- Mac OS X version 10.5.2 Leopard

Product Configurations

To confirm the configuration from the Apple menu, choose About This Mac. The Processor listing will show the speed of the processor followed by the processor type.

The following table shows the iMac (20-inch Early 2008) model configurations at introduction:

Feature	Good Model	Better Model
Intel Core 2 Duo processor	2.4 GHz	2.66 GHz
Memory	1 GB (1 x 1 GB) 800 MHz DDR2 (4 GB max)	2 GB (2 x 1 GB) 800 MHz DDR2 (4 GB max)
Hard Drive, Serial ATA 7200 rpm	250/320/500 GB	320/500/750 GB
Optical Drive	8x PATA SuperDrive	8x PATA SuperDrive
Display	20-inch, 1650x1080, Tn, 98ppi, 300nits	
Graphics	M74 + 128 MB	M76XT + 256 MB
Audio I/O	Combo digital in, Mic, Stereo speakers	
Wireless	PCIe 802.11a/b/g/n, Bluetooth 2.1	
Power Supply	180W Universal	

Opening the Computer

- **Important:** The glass panel on the iMac should only be removed by Apple authorized technicians. Removing the glass panel requires special tools and they must be used to replace any module other than the SO-DIMMs.
- Read and follow all of the handling and cleaning recommendations to prevent damaging the glass and LCD panel.
- Follow ESD precautions when the front bezel and the LCD display are removed.

Note About Images in This Manual

Small differences in appearance between the images pictured and the actual computer you are servicing may exist, however the steps and sequence are the same unless otherwise noted.

Serial Number Location

On the bottom of your iMac stand, you'll find a label with the serial number printed on it.



General Tools

The following tools are required to service the computer:

- ESD-safe workstation and mat
- Soft, clean towel or cloth (to protect the display and removed parts from scratches)
- Black stick (or other nonconductive nylon or plastic flat-blade tool)
- Phillips #2 screwdriver
- Torx T6 screwdriver (magnetized)
- Torx T8 screwdriver (magnetized)
- Torx T10 screwdriver (magnetized)
- Flat-blade screwdriver
- Isopropyl alcohol
- ESD bags

Required Special Tools

Special tools are required to remove, handle, and clean the glass panel such as the following. View the tools in the [Glass Panel](#) take apart chapter.

1. 922-8252 Suction cups, Pkg. of 2
2. 922-8261 Sticky silicone roller (6-inch) to clean the glass panel
3. 922-8262 Sticky sheet pads to clean the silicone roller
4. 922-8263 Polishing cloths, clean, anti-static, optical grade micro fiber “terry” style cloth

-
5. 922-8253 Gloves, lint-free, anti-static, Pkg. of 2
 6. 922-8259 Microfoam bag to store the glass panel, Pkg. of 5
 7. 922-8258 ESD bags, 24x20, Pkg. of 5, to store the LCD panel. **Note:** To prevent the buildup of static charges which may attract dust particles to the surface of the display, store the LCD panel in an anti-static bag whenever it has been removed from the system.
 8. iKlear Apple Polish or Brilliantize anti-static spray cleaning solution. A list of where iKlear/Brilliantize can be obtained is listed in the [Glass Panel](#) chapter of the service manuals. **Note:** IPA (isopropyl alcohol) can be used to clean the glass if you are unable to source iKlear or Brilliantize.

Cleaning Tools Starter Kit

The following tools are offered in the starter kit (076-1277).

- Suction cups, one pair
- Sticky silicone roller (6-inch) to clean the glass panel
- Sticky sheets to clean the silicone roller, 2 pads
- Polishing cloths, clean, anti-static, microfiber “terry” style cloth (5 cloths)
- Gloves, lint-free, anti-static, two pairs
- Microfoam bag to store the glass panel (5 bags)
- ESD bag for LCD display storage, (5 bags)

Removing the Glass Panel

Rubber suction cups (922-8252) and anti-static gloves (922-8253) are required to remove the glass panel. Lift the glass straight up and off the bezel. Review the movie in the [Glass Panel](#) chapter.

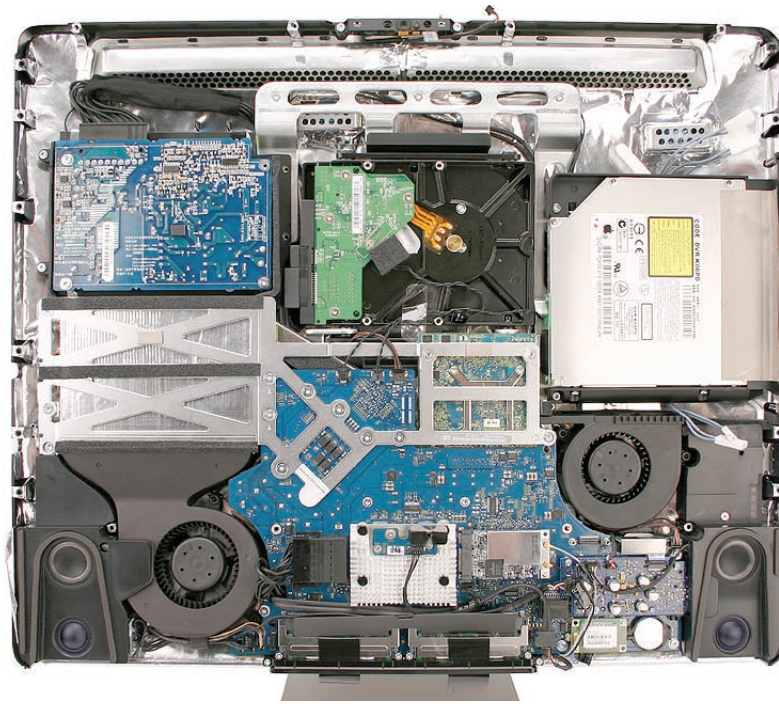


View Under the LCD Panel

Note: To prevent the buildup of static charges which may attract dust particles to the surface of the LCD display, store the display in an anti-static bag whenever it has been removed from the system.

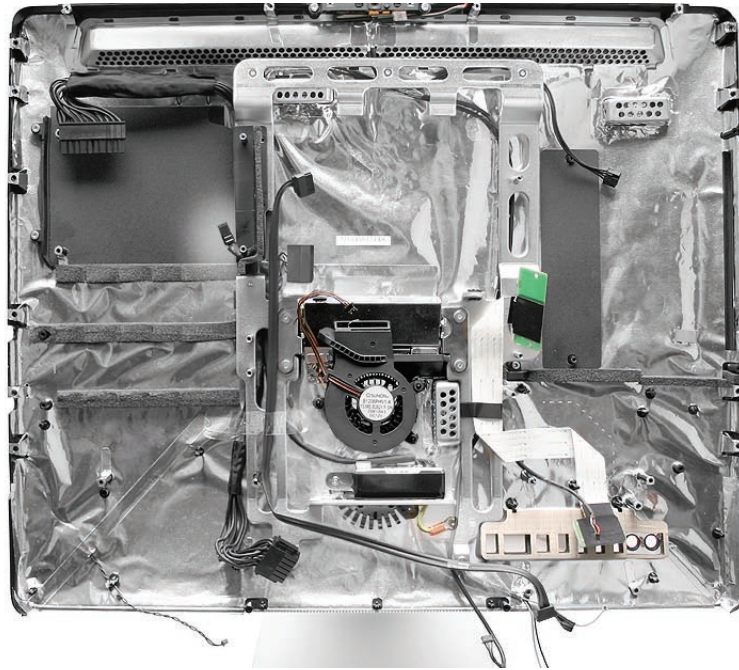


View of the Main Modules



View of Inside the Rear Housing

Inside the rear housing you can see the chassis, AC inlet filter, the mechanism, the hard drive fan, the DC/power supply/SATA/inverter cable, the microphone cable, the camera cable, and the antennas.



Back View

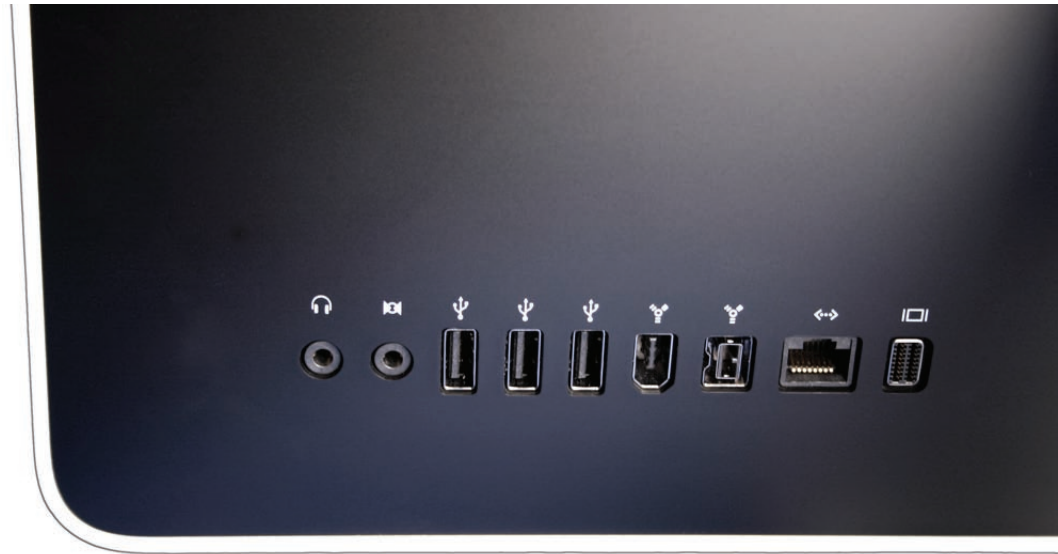
The input/output ports are located on the bottom left side on the back of the computer. The power on button is located on the bottom right side on the back of the computer.



I/O Ports

The input/output ports from left to right are:

- Headphone out/optical digital audio out port
- Audio in/optical digital audio in port
- USB 2.1 ports (3)
- FireWire 400 port
- Firewire 800 port
- Ethernet (10/100/1000 Base-T) port
- Mini-DVI port



Cleaning and Handling the Glass Panel

Follow the cleaning procedures in this manual to ensure the glass panel is free of dust and other particles before returning the computer to the customer.

Note: To view the movie, make sure the manual is opened in Acrobat.



- The iMac (20-inch Early 2008) model has a glass panel that attaches to the outside of the front bezel.
- The glass panel is not tempered and will break into sharp pieces if mishandled. A scratched or broken glass panel is not covered under warranty.
- Removing the glass panel requires special tools such as lint-free gloves, rubber suction cups, microfoam storage bags, and the iKlear cleaning solution.
- **The glass panel must be removed prior to replacing any module other than the SO-DIMM's.**
- To prevent contamination, handle the glass panel only by the edges while wearing lint-free gloves.

The complete list of tools and resources can be found in the [Glass Panel](#) take apart chapter.

Do's and Don'ts

DO

- Handle glass panel using lint free gloves.
- Use only a sticky silicone roller to clean the inside surface of the glass and the LCD panel.
- Use iKlear **ONLY on** the outside surface of the glass panel or use the [LENSPEN](#).
- Place the glass panel into a clean protective microfoam bag when it is not installed on an iMac.
- Store the glass panel in a safe area where it will not be broken or damaged.
- Store the LCD panel in an anti-static bag to prevent the buildup of static charges which may attract dust particles to the display's surface.
- Store the silicone roller and sticky paper within a temperature range of 39-104 degrees F (5-40C).
- Wash the silicone roller in warm soapy water or wipe with isopropyl alcohol if the roller is no longer tacky. Replace the silicone roller if the tackiness does not return.

DO NOT

- Touch the inside of the glass with bare hands or dirty gloves. Fingerprints will be difficult to remove.
- Clean the inside surface of the glass or the LCD with iKlear or other cleaning solutions.
- Place the glass panel onto a work surface where it may collect dust and other contaminants unless it has first been placed into its protective microfoam bag.
- Use iKlear to clean the glass.

Handling a Broken Glass Panel

The glass panel is not tempered and will break into sharp pieces if mishandled.

If the glass is broken it must be carefully removed from the iMac to prevent irreparable damage to the front surface of the LCD. If the front surface of the LCD is scratched by the broken glass the LCD may need to be replaced.

Do not handle broken glass unless you are wearing protective cut-resistant gloves. The lint-free gloves used to prevent contamination of the glass panel are not suitable for handling broken glass.

Use a broom and dust pan to sweep up as much of the broken glass as possible. Glass fragments may have travelled several feet from the location of the glass panel so be sure to thoroughly clean the entire area. Use a vacuum to remove the smaller fragments not picked up by the broom.

Safety

WARNING: HIGH VOLTAGE: The highlighted module below is an AC/DC power supply that poses a shock hazard. When the computer is under power, be aware that the power supply contains high voltages that pose a potential hazard to your personal safety. Never work on or near the power supply with the unit powered on; and as a further precaution, always make sure the unit is unplugged when working on it with the front bezel removed. **A white, shock-hazard warning symbol is silk-screened in the middle of the power supply module.**

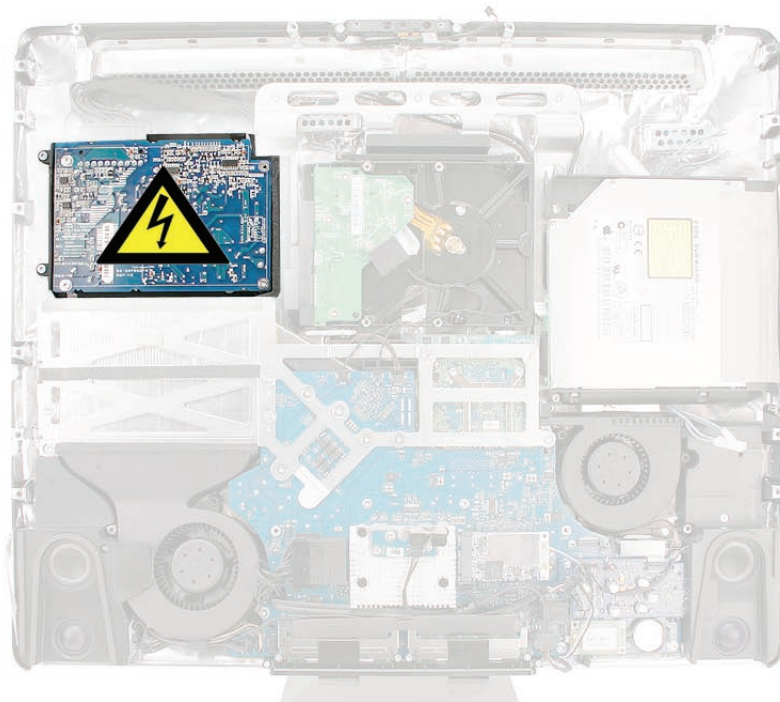
WARNING:



Text or photographs marked by this symbol indicate that a potential hazard to your personal safety exists from a high voltage source.

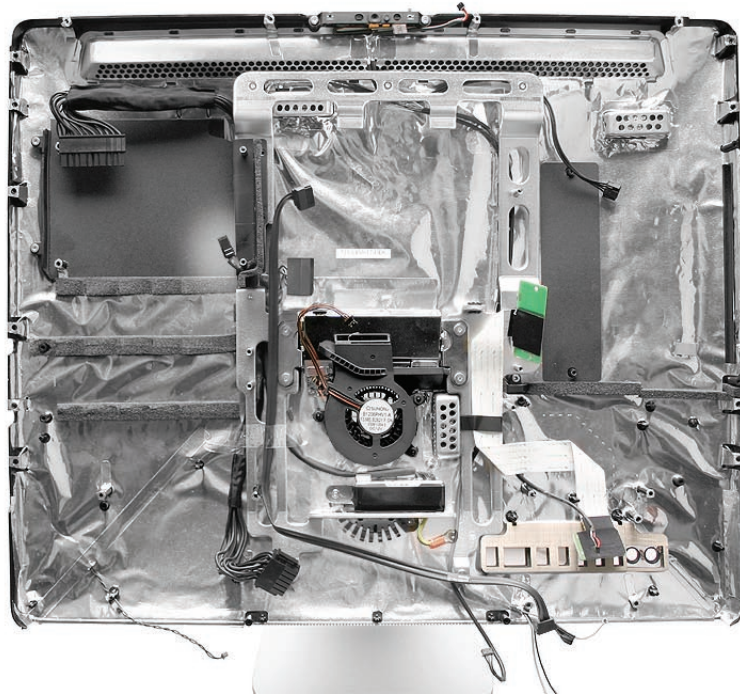
The AC/DC power supply board is a high-voltage source with the unit under power, and remains powered up whenever the system is plugged in, whether or not the system is turned on. Use extreme caution when troubleshooting the system with the front bezel removed.

- Disconnect power to the system before performing maintenance.
- Disconnect ESD wrist straps when working on a plugged in system.
- Don't work alone. In the event of an electrical shock, it is important to have another individual present who can provide assistance.
- Keep one hand in your pocket when working on any computer that is plugged in. This will help ensure that your body does not provide a path to ground in the event that you accidentally make contact with the line voltage.
- Don't wear jewelry, watches, necklaces, or other metallic articles that could present a risk if they accidentally make contact with the power supply circuitry.



EMI Shielding

The rear cover of the computer is wrapped in EMI shielding that is easily torn and damaged. To maintain a properly shielded unit, you must repair all accidental tears and cracks to the shielding by covering them with EMI tape that can be ordered from Apple service.





Access Door

Tools

- Phillips #2 screwdriver
- ESD-safe workstation and mat
- Soft, clean towel or cloth

Preliminary Steps

Before you begin, place the computer face down on a clean, soft, lint-free cloth so that the bottom is facing you.

Part Location



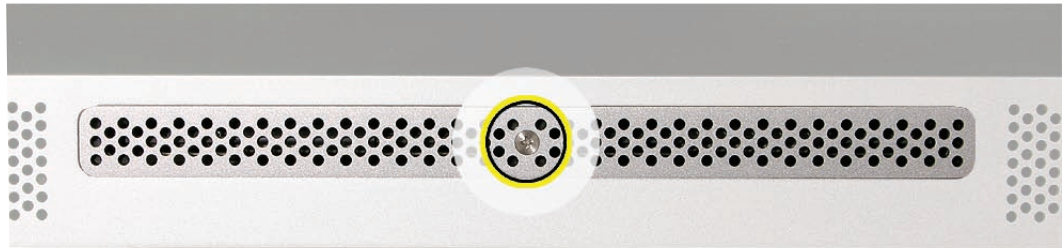
Removing the Access Door

1. Disconnect all cables and the power cord from your iMac.
2. Place a soft, clean towel or cloth on your work surface. Hold the side of the iMac and lay it down so that the screen is against the surface and the bottom is facing you.
3. Raise the stand and use a Phillips #2 screwdriver to loosen the captive screw on the memory access door by turning it counterclockwise.

Important: When removing and installing the RAM access door it is important that you use the correct size Phillips screwdriver. Using one that is too small or too big may damage the screw head, and/or screwdriver. Before trying to remove the RAM access door screw, make sure that the screwdriver tip is in good shape without rounded edges and that it firmly seats into the screw head. If the screwdriver doesn't seat well then do not use it.

If the RAM access door screw head has been severely damaged and cannot be removed with a Phillips #2 screwdriver you may be able to use a small jewelers flat blade screwdriver to engage the screw head and carefully remove it. In some cases it may be necessary to use a screw extractor tool. When using a screw extractor make sure that no metal shavings from the damaged screw drop inside the system. For more information on screw extractors and how to use them type 'screw extractor' into your favorite internet search engine.

4. Remove the access door.



Replacing the Access Door

1. Position the computer face down on a clean, soft, lint-free cloth so that the bottom is facing you.
2. Position the access door on the rear housing over the memory compartment.
3. Use a Phillips #2 screwdriver to tighten the captive screw.
4. **Important:** To ensure proper cooling the iMac should not be operated without the memory access door installed.



Memory

Tools

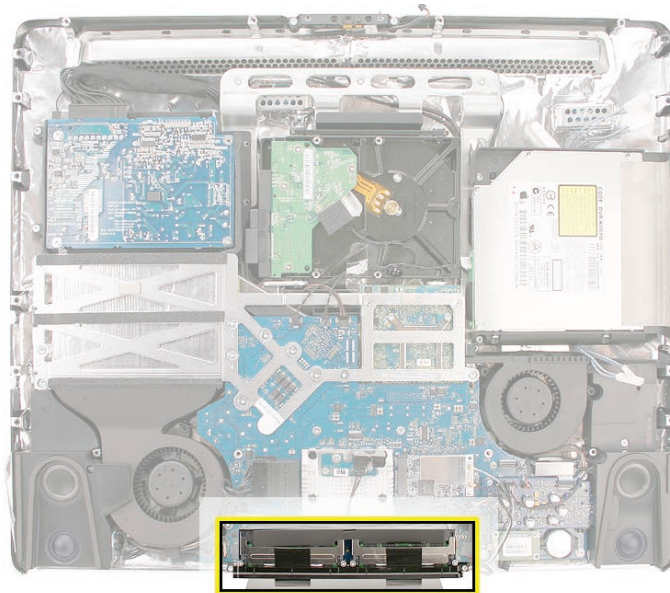
- ESD mat
- Soft , clean towel or cloth

Preliminary Steps

Before you begin, remove the [access door](#).

Warning: Always shut down the computer and remove the power cord before installing memory. Do not attempt to install memory in the computer while it is plugged in.

Part Location



Removing the Memory

1. Shut down the computer, and disconnect all cables including the power cord.
2. Holding the sides of the computer, lay it face down on a soft, clean cloth so the stand is facing you.
3. After removing the access door, touch the metal stand or bezel to discharge any static electricity from your body.

Important: Always discharge static before you touch any parts such as the memory board. To avoid generating static electricity, do not walk around the room until you have finished replacing the memory.



-
4. Untuck the tab in the memory compartment. Pull it to eject the installed memory module.



5. Set the memory modules in an anti-static bag and set them aside.

Replacing the Memory

1. With the computer face down, orient the notch on the DIMM with the notch in the memory slot. In this case, the notch is on the left.



2. With your fingers, press the DIMM fully into the slot until you hear a click. Repeat for the other DIMM slot.
3. Fold the black tab over each DIMM.
4. Replace the [memory access door](#).
5. Use a Phillips #1 screwdriver to tighten the captive screw on the memory access door.
6. Make sure the computer recognizes the new memory by opening System Profiler, clicking More Info, and clicking Memory.



Glass Panel

Tools

This procedure requires the following tools, which are offered individually or as part of the cleaning [kit](#), 076-1277.

- Suction cups (922-8252)
- Sticky silicone roller (6-inch) to clean the glass panel (922-8261)
- Sticky sheets to clean the silicone roller (922-8262)
- Polishing cloths, clean, anti-static, optical grade micro fiber “terry” style cloth (922-8263)
- iKlear Apple Polish or Brilliance anti-static spray cleaning solution for the outside of the glass
- Isopropyl alcohol (IPA) or [LENSPEN](#) to clean the inside of the glass
- Gloves, lint-free, anti-static (922-8253)
- Microfoam bag to store the glass panel (922-8259)
- ESD bag for LCD display storage (922-8258)

Note: Tools without part numbers can be sourced directly from the vendor. Refer to “[Cleaning Tool Resources](#)” at the end of this chapter.

Part Location



This iMac model has a glass panel that attaches to the outside of the front bezel. The glass panel is not tempered and will break into sharp pieces if mishandled. A scratched or broken glass panel is not covered under warranty. Removing the glass panel requires special tools such as lint-free gloves, rubber suction cups, microfoam storage bags, and the iKlear cleaning solution. **The glass panel must be removed prior to replacing any module other than the SO-DIMM's.** To prevent contamination, the glass panel must only be handled by the edges while wearing lint-free gloves.

Cleaning and Handling of the Glass Panel

Follow the cleaning procedures in this manual to ensure the glass panel is free of dust and other particles before returning the computer to the customer. Refer to the movie in the sidebar for a cleaning and handling demonstration.

Note: To view the movie, make sure the manual is opened in Acrobat.



Isopropyl Alcohol (IPA)

Cleaning the Glass

In the unfortunate event that gloves are not worn, and fingerprints and oil smudges are visible on the inside of the glass, cleaning should be done using a lint free cloth and IPA. Spray a small amount of IPA onto a **CLEAN** lint free cloth to avoid introducing any other contaminants. Gently wipe the area and allow the glass to dry. **Note:** The silicone rollers are only effective in removing dust and other particles. If fingerprints or oil smudges are not removed prior to using the roller, the silicone roller will transfer the fingerprints and oil smudges onto the glass.

Cleaning the Silicone Roller

Clean the silicone roller by wiping it down with IPA (Isopropyl Alcohol) or washing it with warm soapy water.

DO

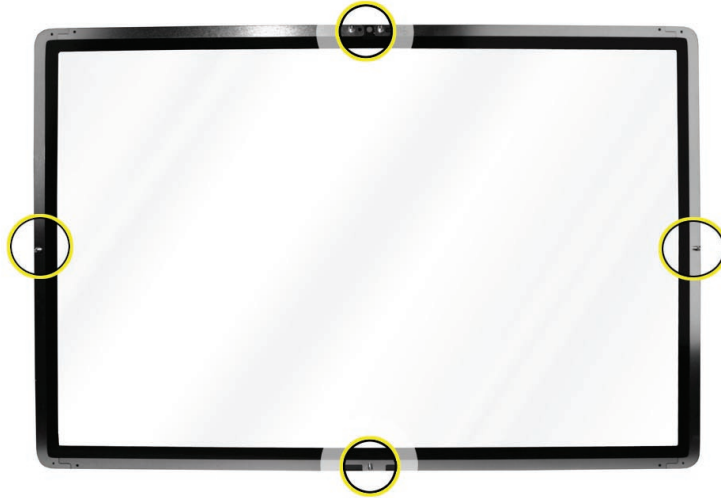
- Handle glass panel using lint free gloves.
- Use only a sticky silicone roller to clean the inside surface of the glass and the LCD panel.
- Use iKlear **ONLY on** the outside surface of the glass panel or use the [LENSPEN](#).
- Use Isopropyl alcohol or the LENS PEN to clean **ONLY** the inside surface of the glass.
- Place the glass panel into a clean protective microfoam bag when it is not installed on an iMac.
- Store the glass panel in a safe area where it will not be broken or damaged.
- Store the LCD panel in an anti-static bag to prevent the buildup of static charges which may attract dust particles to the display's surface.
- Store the silicone roller and sticky paper within a temperature range of 39-104 degrees F (5-40C).
- Wash the silicone roller in warm soapy water or clean it by wiping it down with isopropyl alcohol if the roller is no longer tacky. Replace the silicone roller if the tackiness does not return.

DO NOT

- Touch the inside of the glass with bare hands or dirty gloves. Fingerprints will be very difficult to remove.
- Clean the inside surface of the glass or the LCD with iKlear or other cleaning solutions.
- Place the glass panel onto a work surface where it may collect dust and other contaminants unless it has first been placed into its protective microfoam bag.
- Use single wipe iKlear packets or other cleaning solutions to clean the glass.

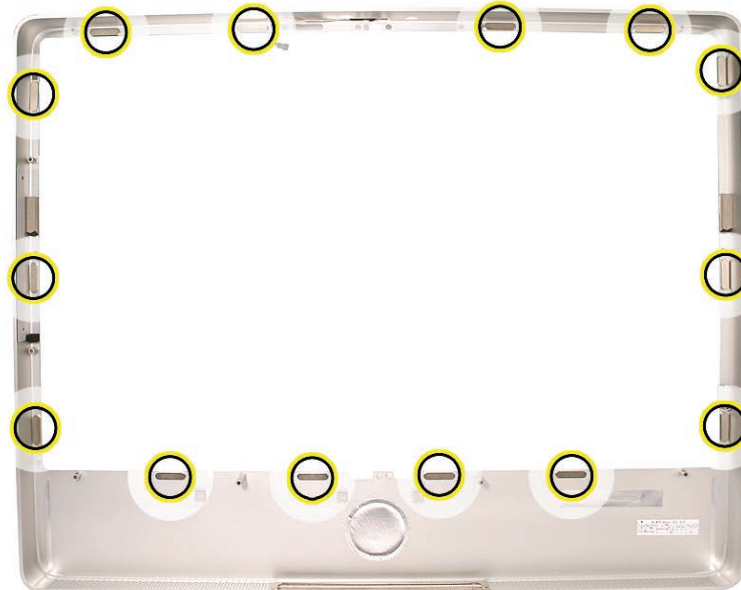
Metal Alignment Pins on the Glass Panel

There are alignment pins at the top of the glass panel near the camera, one pin at the bottom near the IR remote sensor, and a pin on the left and right side of the glass. **Important:** If the glass is removed from the bezel at an angle, the metal alignment pins may bend, causing scratches on the inside of the glass and possibly requiring replacement of the glass panel.



Magnets on the Front Bezel

The glass panel has a thin silver ferrous metal band affixed to the perimeter which is magnetically attracted to the fourteen magnets (circled below) which are attached to the front bezel. These magnets hold the glass panel in place. Suction cups are used to pull the glass panel away from the magnets on the front bezel.



Removing the Glass Panel

1. Apple **strongly** recommends wearing clean lint-free gloves whenever handling the glass panel. The gloves protect the glass panel from body oils, dirt, and other contaminants. Put on a pair of clean gloves with the rubberized-side of the gloves on the palm side of your hand.



2. Position the computer on the rear cover, on a soft protective lint-free surface, with the stand facing you
3. Clean off the suction cups, making sure they are free of contaminants. It may be necessary to wash the suction cups with a mild liquid soap in order to remove the residual release agents applied during manufacturing.



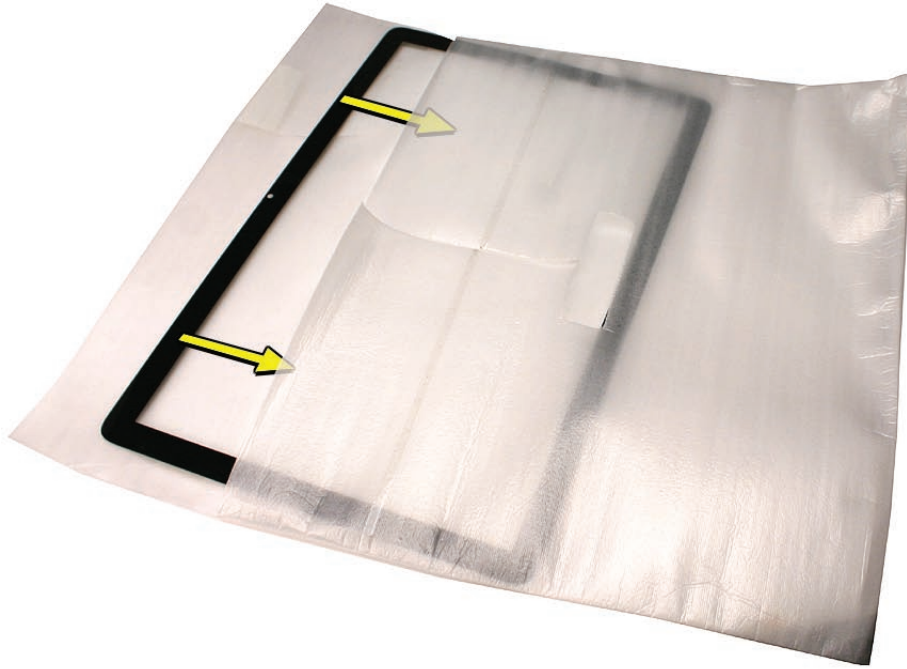
-
4. Gently press the suction cups in opposite corners on the glass panel, as shown. **Important:** Make sure the suction cups are firmly attached to the glass before lifting the glass.



5. Hold onto the suction cups and gently lift the glass panel **straight up and off the bezel**.



-
6. Set the glass down on the microfoam bag or clean lint-free surface and remove the suction cups. Squeeze the base of each suction cup to release them from the glass panel.
 7. Touching only the edges of the glass, slide the glass panel into the microfoam static-free bag. Set the glass aside in a location where it won't get damaged. The bag will help minimize contamination of the glass.



Replacing the Glass Panel

1. Put on a pair of clean gloves with the rubberized-side of the gloves on the palm side of your hand.



2. Install the LCD display panel onto the computer if it was removed.
3. Replace the front bezel if it was removed, connect the microphone cable and replace the bezel screws.
4. Locate the sticky silicone roller and the dust removal pad. Remove the protective covering on the silicone roller and peel the protective cover off the dust removal pad.



-
5. Holding the sticky paper with your free hand, clean the silicone roller on the sticky paper by rolling the roller back and forth once or twice on the sticky paper. If the sticky paper has been used multiple times and looks dirty, use a new piece of sticky paper. **Note:** Wash the silicone roller in warm soapy water if the roller is no longer tacky. Replace the silicone roller if the tackiness does not return.



6. Set the roller aside on its clean protective roller cover while you prepare the glass and computer.

-
7. REMINDER: WEAR CLEAN GLOVES AND ONLY HANDLE THE GLASS BY THE EDGES.



8. Stand the computer upright. **Note:** Less dust particles will settle on the LCD panel with the computer in the vertical position.
9. Roll the sticky silicone roller over the LCD panel to remove any particles. **Note:** A larger silicone roller was used for demonstration purposes, however; the 6-inch silicone roller from Apple service will suffice.



10. Remove the glass panel from the microfoam bag. Place the glass on the bag with the inside surface of the glass (side with metal pins) facing up.

-
11. Clean the **INSIDE** of the glass panel with the clean silicone roller to remove dust or other loose particles. Gently roll the clean silicone roller over the inside of the glass. **Note: If fingerprints and oils are on the inside of the glass, clean the inside first with isopropyl alcohol or use the [LENSPEN LapTop PRO](#).**



12. Holding the glass by the edges, carefully line up the metal pins on the inside of the glass panel with the holes at the top of the front bezel and the hole at the bottom of the bezel. Gently lower the glass panel onto the bezel. The magnets on the front bezel will pull panel and hold the glass panel in place.



-
13. Clean the outside of the glass panel with a clean microfiber cleaning cloth. If necessary, spray a small amount (two pumps) of iKlear polish on the outside of the glass panel. Wipe the glass until the solution completely disappears and there is no longer any residue or haze. CAUTION: Do not use single wipe iKlear packets or other cleaning solutions to clean the glass. The [LENSPEN LapTop PRO](#) is also a very effective tool to use for smudges or fingerprints on the outside of the glass panel.



14. Once the glass has been cleaned and polished, visually inspect the glass for any remaining dust, fingerprints, or a hazy residue. If there are contaminants trapped between the LCD panel and the glass panel repeat the cleaning procedure described in this section before returning the system to the customer.
15. Replace the memory access door.

Installing a Replacement Glass Panel

1. Stand the computer upright. **Note:** Fewer dust particles will settle on the LCD panel with the computer in the vertical position.
2. Roll the sticky silicone roller over the LCD panel to remove any particles.



3. Remove the new glass panel from the service packaging. **Note:** The new panels have a removable film protecting the glass on both sides.
4. Place the glass on a clean microfoam bag with the inside of the glass facing up (the side with metal pins.) Wearing gloves, carefully remove the protective film from the inside surface of the glass.



-
5. Clean the **INSIDE** surface of the glass panel with the silicone roller. Gently roll the clean silicone roller over the inside surface of the glass. **Note: If fingerprints and oils are on the inside of the glass, clean the inside first with isopropyl alcohol or use the [LENSPEN](#) [LapTop PRO](#).**



6. Holding the glass by the edges, carefully line up the metal pins on the inside of the glass panel with the holes at the top of the front bezel and the hole at the bottom of the bezel. Gently lower the glass panel onto the bezel. The magnets on the front bezel will pull and hold the glass panel in place.



-
7. Peel the protective film from the outside surface of the glass panel. If the glass panel pulls away from the front bezel, gently hold it in place while removing the protective film.
 8. Clean the outside of the glass panel with a clean microfiber cleaning cloth and use the [LENSPEN LapTop PRO](#) to remove smudges or fingerprints on the outside of the glass panel.
 9. If necessary, spray a small amount (two pumps) of iKlear polish on the outside of the glass panel. Wipe the glass until the solution completely disappears and there is no longer any residue or haze.



10. Once the glass has been cleaned and polished, visually inspect the glass for any remaining dust, fingerprints, or a hazy residue. If there are contaminants trapped between the LCD panel and the glass panel repeat the cleaning procedure described in this section before returning the system to the customer.
11. Replace the memory access door.

Cleaning Tool Kit

The following tools are offered in the cleaning kit (076-1277).

- Suction cups, Qty. of one (pair)
- Sticky silicone roller (6-inch) to clean the glass panel, Qty. of one
- Sticky sheets to clean the silicone roller, Qty. of 2 pads
- Polishing cloths, clean, anti-static, micro fiber “terry” style cloth, Qty. of one (5 cloths)
- Gloves, lint-free, anti-static, Qty. of two (pair)
- Microfoam bag to store the glass panel, Qty. of one (5 bags)
- ESD bag for LCD display storage, Qty. of one (5 bags)

Cleaning Tool Resources

1. MCM Portal (<http://www.mcmb2b.com/appleasp>)
2. LENS PEN: www.lenspen.com, the LapTop Pro or the VidiMax are very effective in removing fingerprint smudges on the LCD and on the inside surface of the glass.
3. iKlear distributors: (<http://www.iklearscreen.com/iklear.aspx>)
 - iKlear International dealer listing: <http://meridrew.com/international.html>
 - iKlear US/Canada dealer listing: <http://meridrew.com/search/search.php>
4. Japan: Pleiades Digital Communications, Inc. www.pleiadesdesigns.co.jp
5. Brilliance is an alternative cleaning solution <http://www.brilliance.com/>
 - Brilliance products are listed here: <http://www.brilliance.com/products2.html>
 - Brilliance dealer locator: http://www.brilliance.com/brilliance_dealer_locator.htm
6. Cleaning Cloth
 - The micro fiber “terry” style cleaning cloth can be purchased directly from iKlear or Brilliance

LENSPEN Screen Cleaning Device

LENSPEN products are simple to use and are effective at removing smudges and fingerprints on the inside/outside of the glass panel. The two LENS PEN products that have been tested on the iMac are shown below, the VidiMax and the LapTop-Pro. Refer to www.lenspen.com for more information.



Ionizing Air Gun

The ionizing air gun is an optional tool you may want to consider when cleaning iMac glass panels. The ionizing gun performs electrostatic elimination and dust removal instantly with ion balanced air. Various sources can be found in Google.



Front Bezel

Tools

This procedure requires the following tools:

- Torx T8 screwdriver
- Soft, clean towel or cloth

Preliminary Steps

Before you begin, remove the [access door](#) and [glass panel](#).

Part Location



Removing the Front Bezel

1. Place the computer on a soft protective lint-free surface such as a very clean ESD mat to avoid damaging the finish on the stand or rear housing.
2. Position the computer on the rear cover with the stand facing you.
3. Remove the twelve screws around the bezel. **Replacement Note:** The four longer screws (25mm) attach along the bottom of the panel.



922-8207, 25 mm



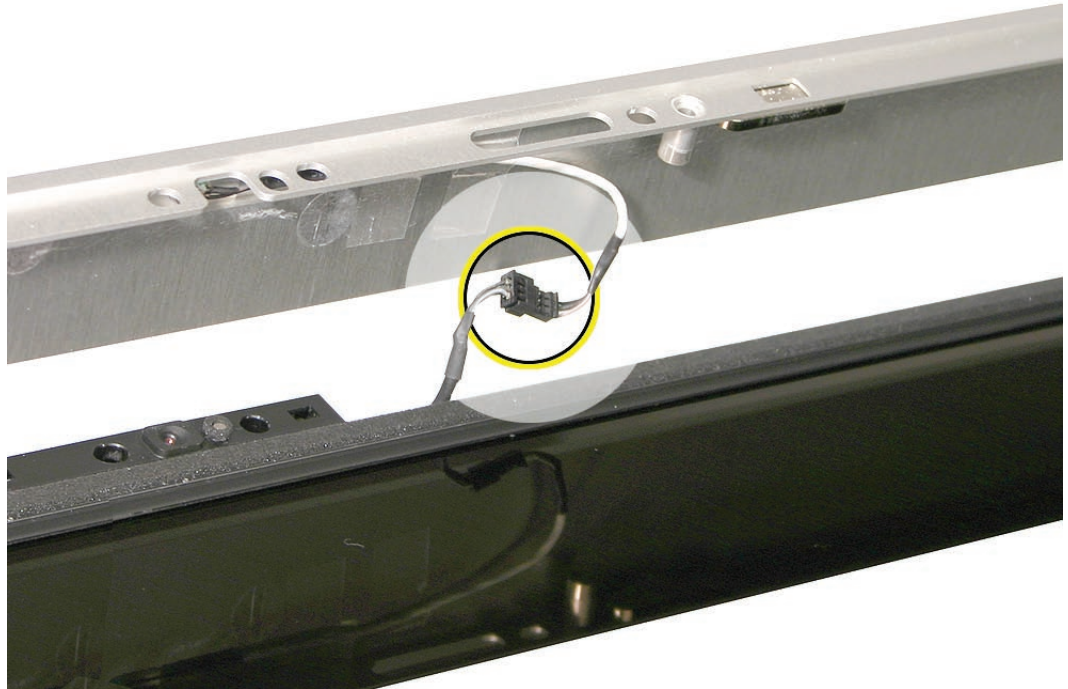
922-8206, 13 mm



-
4. With the upper corners loosened, lift up—but do not remove—the bezel.



5. Notice the connected microphone cable at the top of the bezel. Without straining the cable, hold the bezel up, and disconnect the microphone cable from the cable extension.



-
6. Continue lifting the front bezel toward you and off the rear housing.



Replacing the Front Bezel

1. Place the computer on a soft protective lint-free surface such as a very clean ESD mat to avoid damaging the finish on the stand or rear housing.
2. Position the computer on the rear cover with the stand facing you.
3. Position the bottom of the front bezel over the bottom edge of the rear cover.
4. Lower the front bezel, connect the microphone cable to the extension cable and pull the cable up slightly through the opening in the bezel. Carefully lower the bezel onto the computer, and make sure the cable is not pinched. Tuck the cable into the opening at the top of the bezel.



-
5. Replace the twelve screws around the bezel. **Replacement Note:** The four longer screws (25mm) attach to the bezel along the bottom of the panel.



922-8207, 25 mm



922-8206, 13 mm



6. Clean and replace the glass panel. **Note:** This step is very important. Follow the procedures to ensure the glass is clean and free of particles.
7. [Replace the access door.](#)



Camera Board

Tools

- Torx T8 screwdriver
- ESD mat, soft , clean towel or cloth

Preliminary Steps

Before you begin, remove the [access door](#) , [glass panel](#), and [front bezel](#).

Part Location



Removing the Camera Board

1. The camera board bracket and cable are visible after you remove the front bezel off the computer.



2. Remove two 9mm T8 screws on the camera bracket.

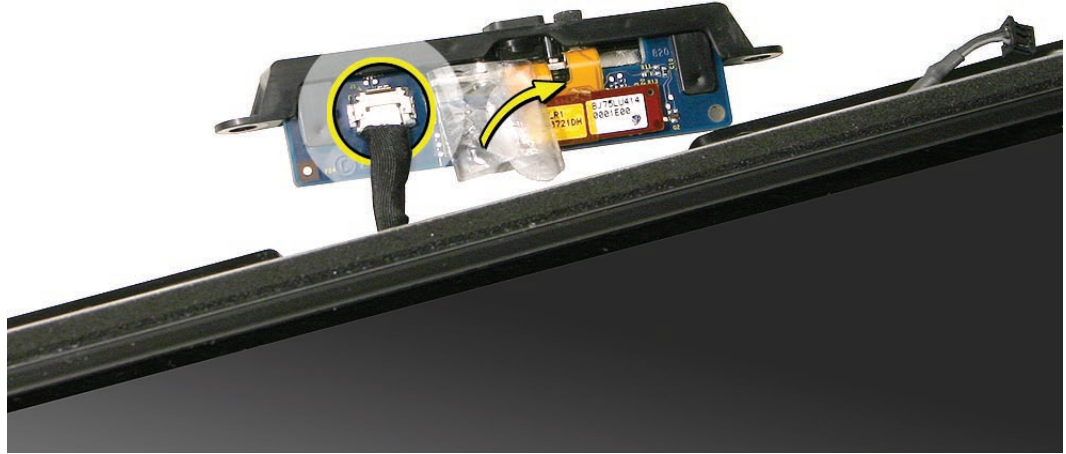


922-8171



3. Lift the camera bracket out of the rear housing enough to access the kapton tape securing the camera cable.

-
4. Unwrap the kapton tape covering the camera cable and connector. Disconnect the camera cable from the camera board. Set the camera board and attached bracket aside.



Replacing the Camera Board

1. Connect the camera cable to the camera board. Make sure the cable is securely inserted into the connector. Reapply the kapton tape over the cable and connector.
2. Lower the camera bracket onto the black posts on the rear cover.
3. Replace the two T8 screws.



922-8171



4. [Replace the front bezel.](#)
5. [Clean and replace the glass panel.](#) **Note:** This step is very important. Follow the procedures to ensure the glass is clean and free of particles.
6. [Replace the access door.](#)



Battery

Tools

The only tool required for this procedure is a black stick (or other nonconductive plastic or nylon tool).

Preliminary Steps

Before you begin, remove the following:

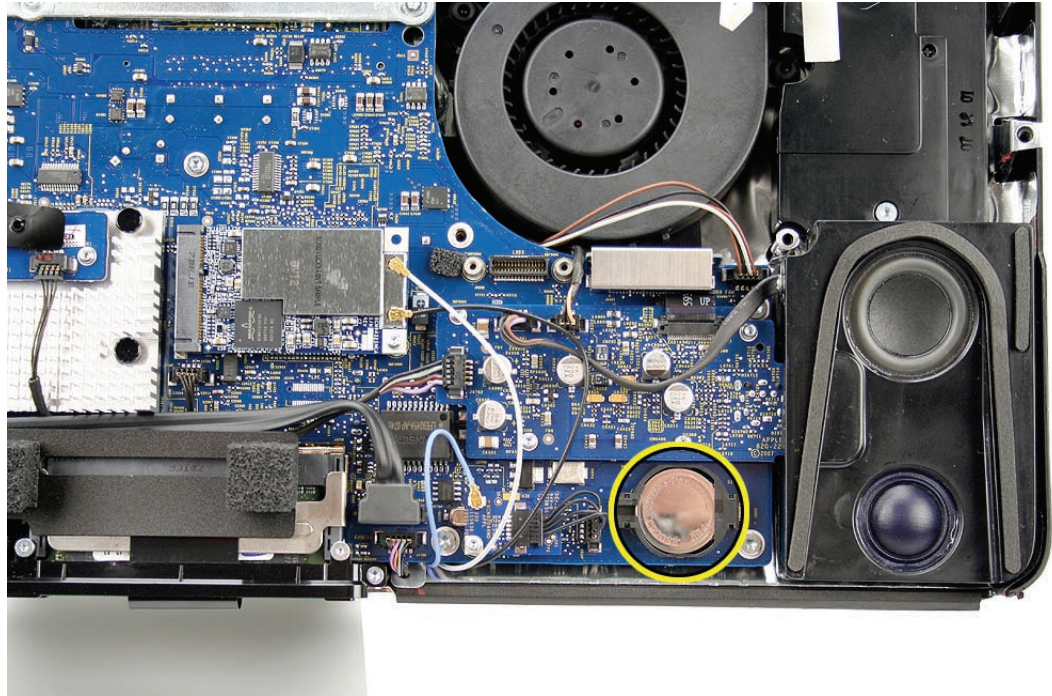
- [Access door](#)
- [Glass panel](#)
- [Front bezel](#)

Part Location



Removing the Battery

1. Use a black stick to pry out the battery from the battery socket on the logic board.



2. Before installing the battery, make sure the side with the engraved markings (+ side) is up .

Replacing the Battery

1. Make sure the battery socket is open and free of dust.
2. Press the battery into the socket. Make sure the side with the engraved markings (+ side) is facing up.



3. Lower the front bezel, connect the microphone cable, replace the front bezel screws.
4. [Replace the front bezel.](#)
5. [Clean and replace the glass panel.](#) **Note:** This step is very important. Follow the procedures to ensure the glass is clean and free of particles.
6. [Replace the access door.](#)



IR (Infrared) Board

Tools

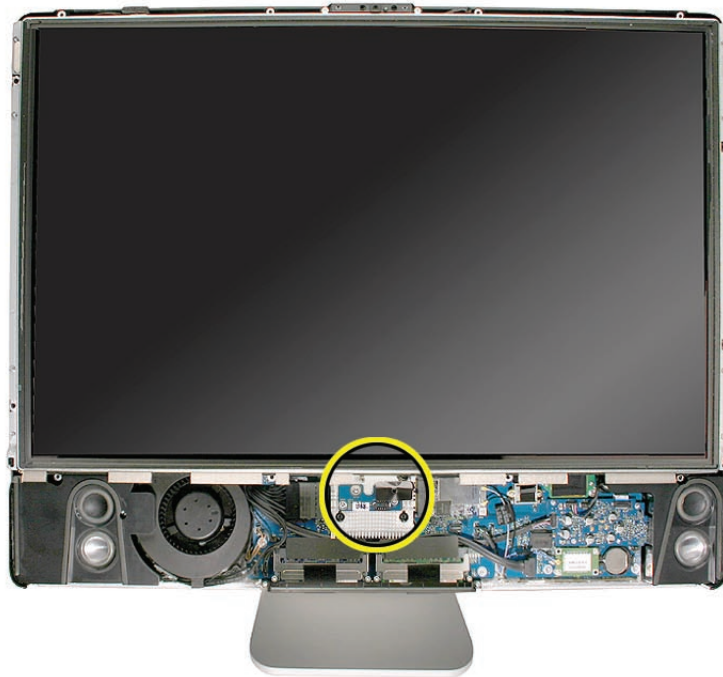
The only tool required for this procedure is a Torx T6 screwdriver.

Preliminary Steps

Before you begin, remove the following:

- [Access door](#)
- [Glass panel](#)
- [Front bezel](#)

Part Location

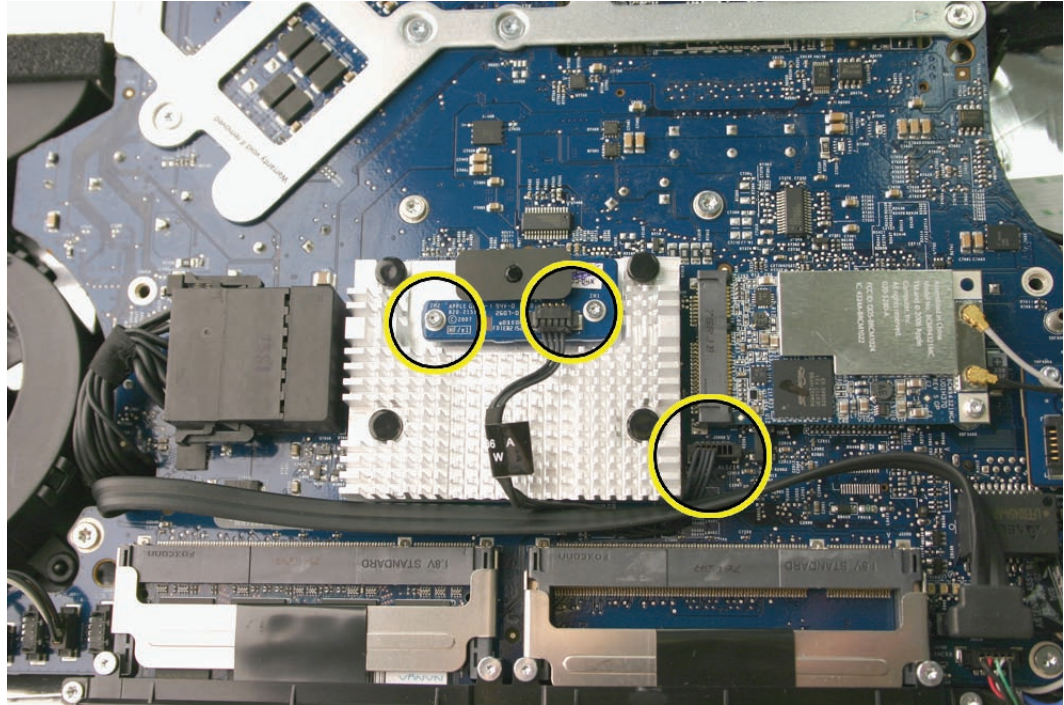


Removing the IR Board

1. Remove the two T6 screws from the IR board and disconnect the IR cable from either the IR board or the logic board. **Note:** It doesn't matter which board you disconnect the IR cable from when removing the IR board.



922-8256

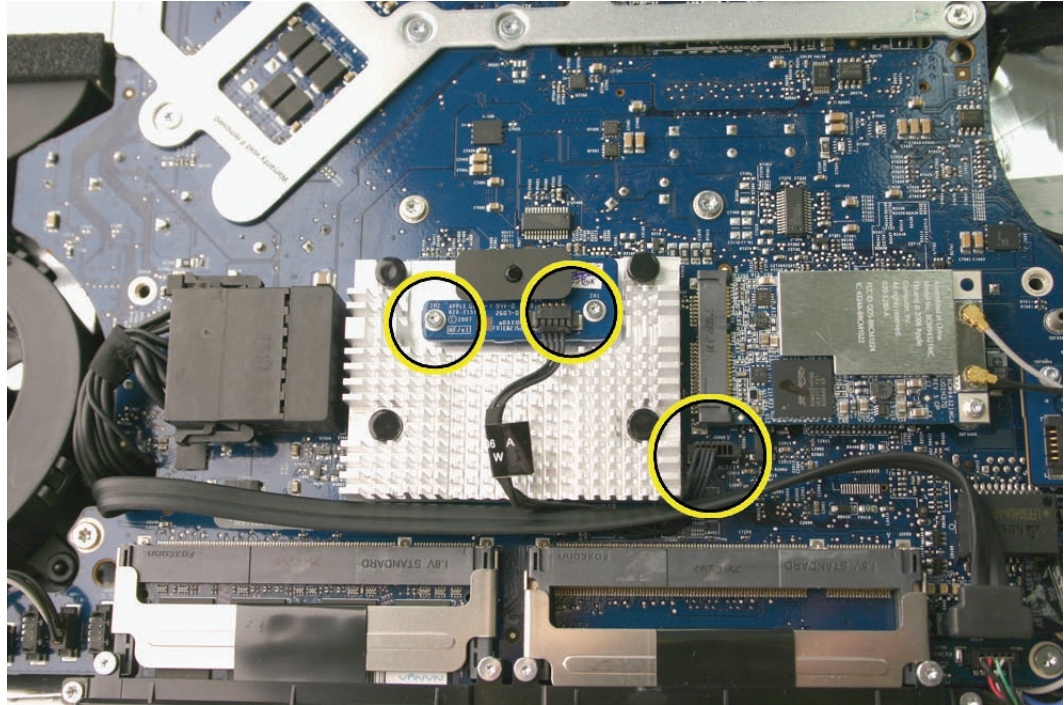


2. Lift the IR board from the heatsink.

Replacing the IR Board

1. If removed, connect the IR cable to the IR board.
2. Install the two T6 screws from IR board and connect the IR cable to the logic board.


922-8256



3. [Replace the front bezel.](#)
4. [Clean and replace the glass panel.](#) **Note:** This step is very important. Follow the procedures to ensure the glass is clean and free of particles.
5. [Replace the access door.](#)



AirPort Extreme Card

Tools

- Torx T6 screwdriver

Preliminary Steps

Before you begin, remove the following:

- [Access door](#)
- [Glass panel](#)
- [Front bezel](#)

Part Location

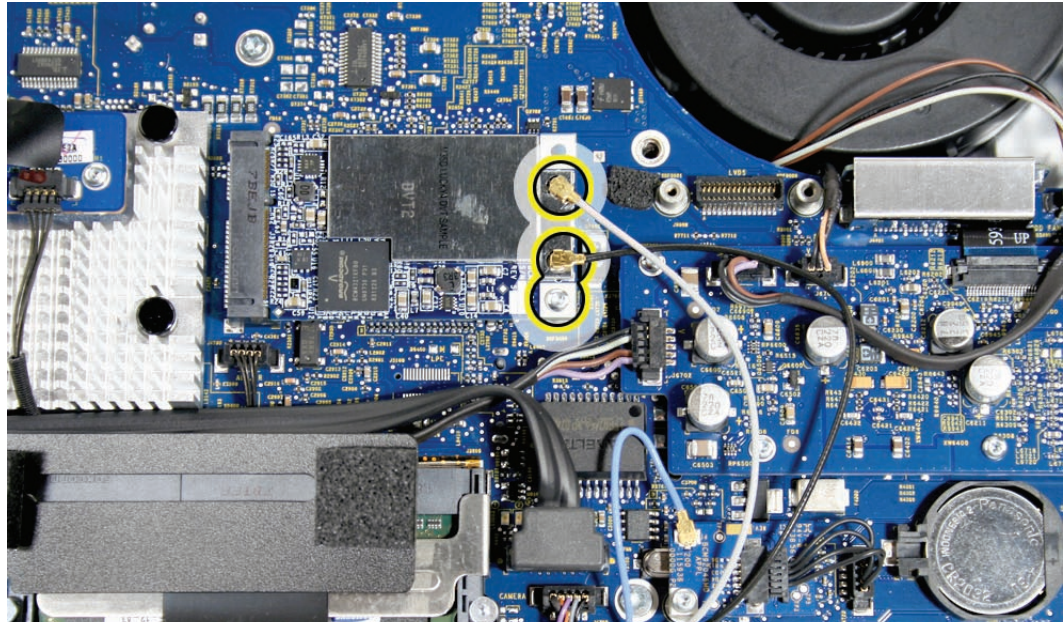


Removing the AirPort Extreme Card

1. Using a T6 torx screwdriver, remove the 5-mm long screw and disconnect the two antenna cables from the AirPort Extreme card. **Note:** The antenna cables and connectors are very delicate and should be carefully removed by pulling on the antenna cable connector, not on the cable.



922-7010



2. Holding the card by the edges, pull the AirPort Extreme card out of the slot.

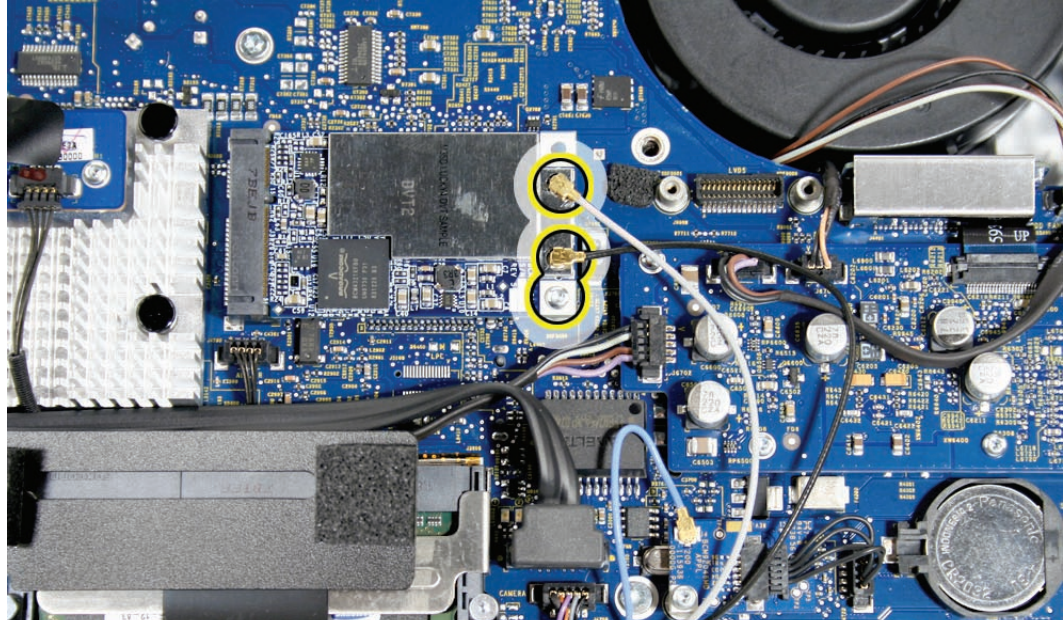


Replacing the AirPort Extreme Card

1. Align the AirPort Extreme card with the slot on the logic board. Insert the board into the slot.
2. Connect the antenna cables to the connectors on the AirPort Extreme card.
Note: The antenna cables might include an “L” or “R” tab near the connector end; however, you can disregard that because the cable position can be swapped without any change in performance.
3. Replace the T6 screw.



922-7010



4. [Replace the front bezel.](#)
5. [Clean and replace the glass panel.](#) **Note:** This step is very important. Follow the procedures to ensure the glass is clean and free of particles.
6. [Replace the access door.](#)



Bluetooth Board

Tools

- Torx T6 screwdriver

Preliminary Steps

Before you begin, remove the following:

- [Access door](#)
- [Glass panel](#)
- [Front bezel](#)

Part Location

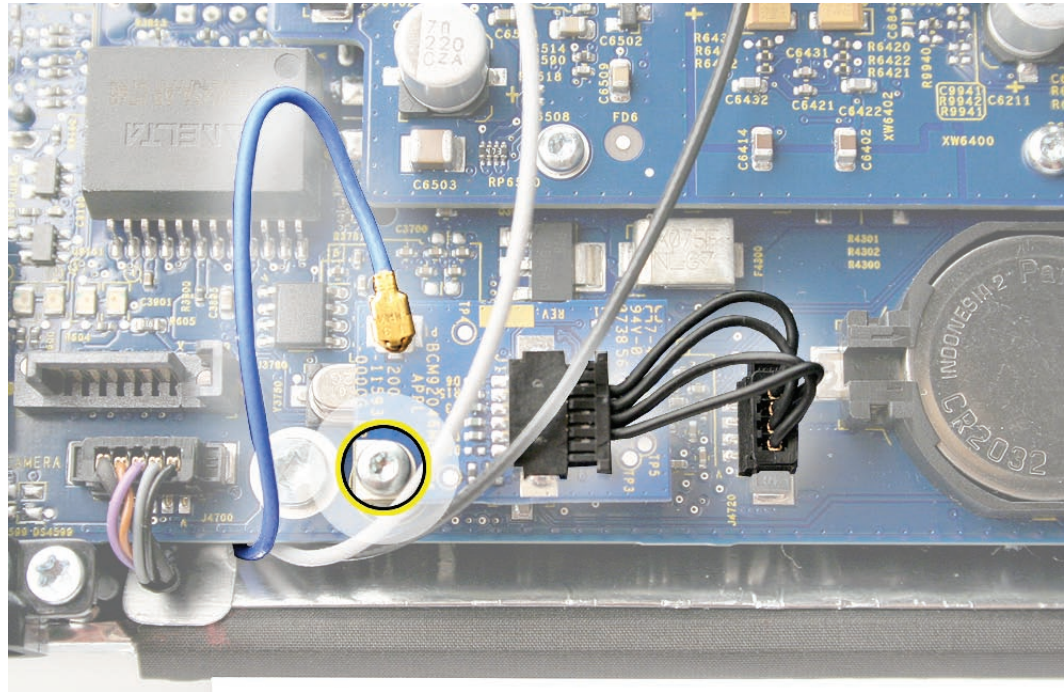


Removing the Bluetooth Board

1. Disconnect the blue Bluetooth antenna from the top left corner of the board and the tiny, black cable that connects from the Bluetooth board to the logic board.
2. Using a T6 torx screwdriver, remove the T6 screw from the lower left corner of the Bluetooth board. Lift the Bluetooth board off the logic board.

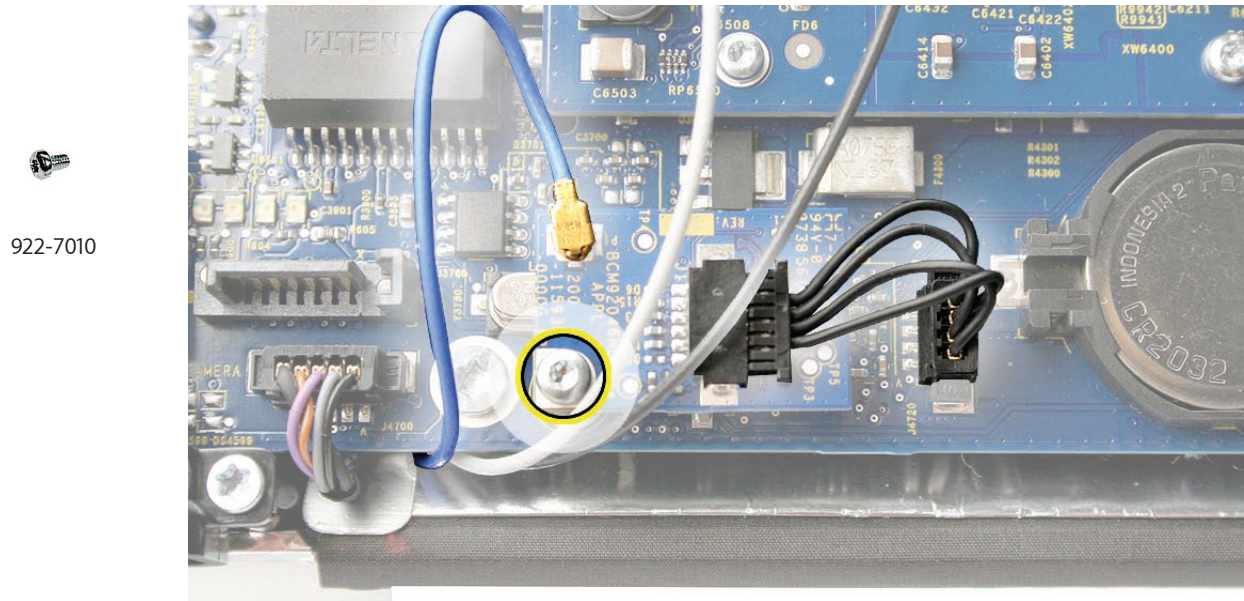


922-7010



Replacing the Bluetooth Board

1. Connect the tiny, black Bluetooth cable to the Bluetooth board and to the logic board.
2. Press the Bluetooth board onto the logic board connector.
3. Connect the Bluetooth antenna to the Bluetooth board.
4. Replace the one T6 screw in the lower left corner of the Bluetooth board.



5. [Replace the front bezel.](#)
6. [Clean and replace the glass panel.](#) **Note:** This step is very important. Follow the procedures to ensure the glass is clean and free of particles.
7. [Replace the access door.](#)



LCD Display Panel

Tools

- Torx T6 screwdriver
- Torx T8 screwdriver

Preliminary Steps

Before you begin, remove the following:

- [Access door](#)
- [Glass panel](#)
- [Front bezel](#)

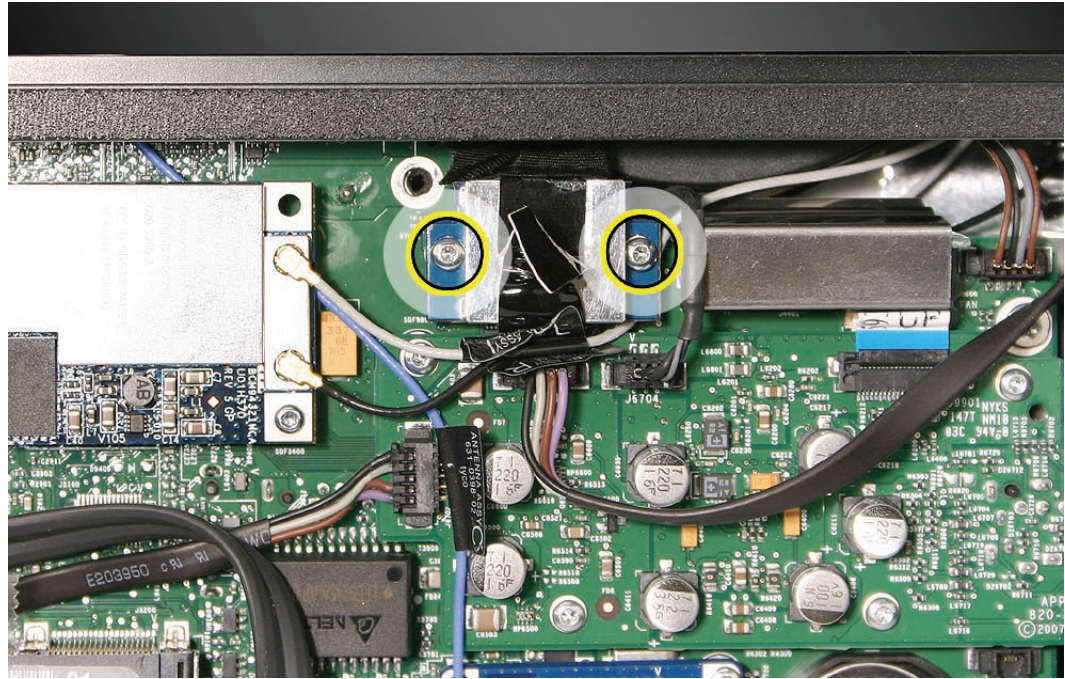
Important: To prevent the buildup of static charges which may attract dust particles to the surface of the display, store the LCD display panel in an anti-static bag whenever it has been removed from the system.

Part Location



Removing the Display Panel

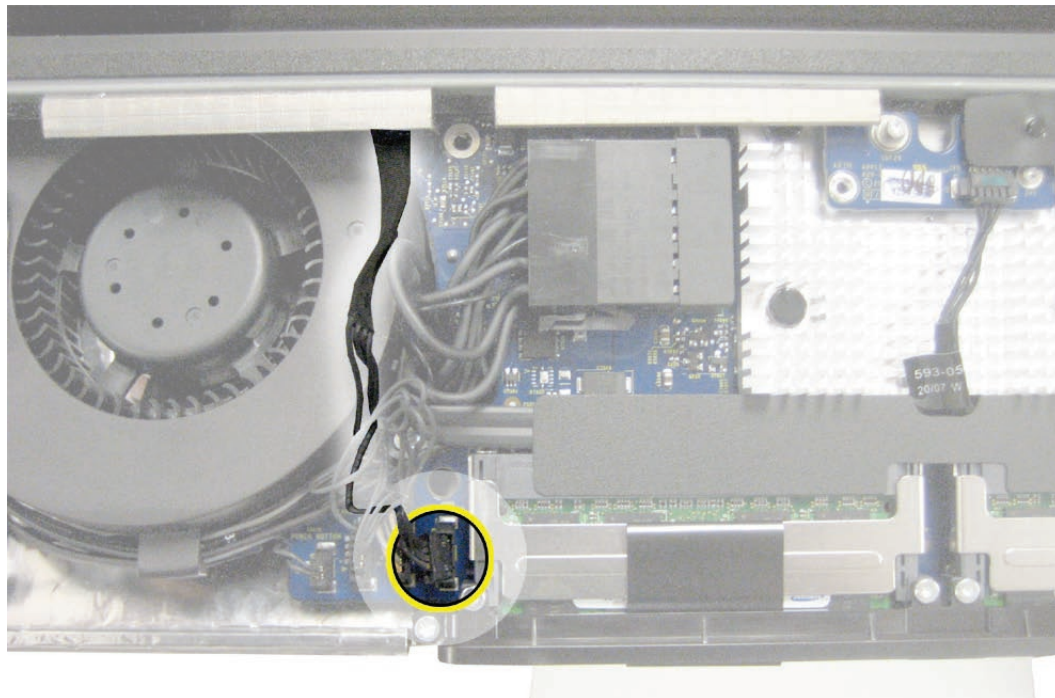
1. Place the computer with the display face up.
2. Remove the two T6 screws from the LVDS connector. Pull the black tab on the LVDS cable to disconnect it from the logic board.



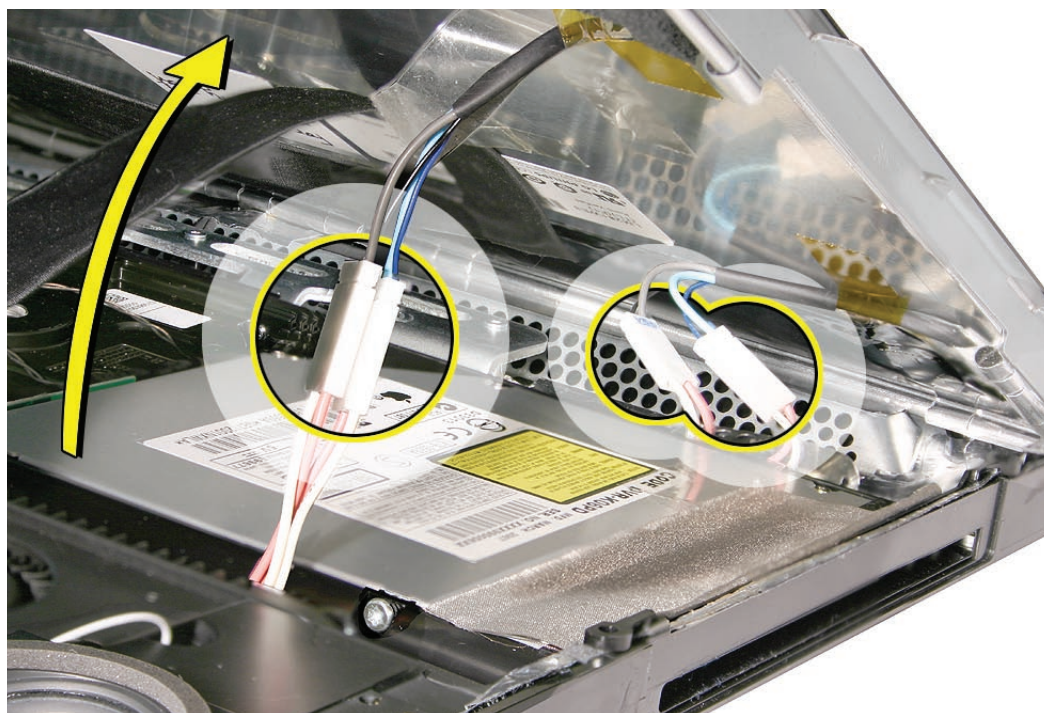
3. Remove the eight 8-mm long T8 screws from the sides of the panel frame.



4. Disconnect the display sensor cable from the connector on the left side of the logic board.



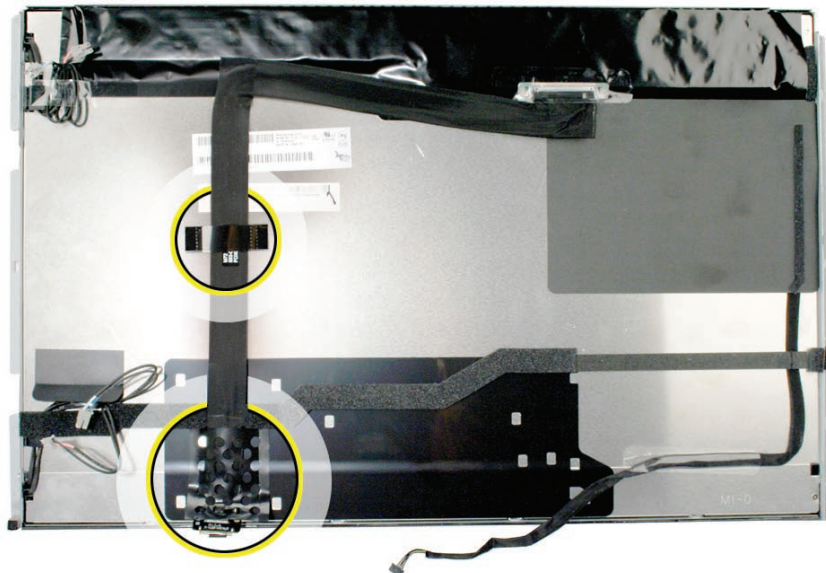
5. Grasp the LCD panel at the bottom edge, and tilt up the panel. On the right side, disconnect the four inverter cable connectors. Pull the connectors straight out. DO NOT pull on the wires.



-
6. Lift the LCD panel up and off the rear housing. **Important:** To prevent the buildup of static charges which may attract dust particles to the surface of the display, store the LCD panel in an anti-static bag whenever it has been removed from the system.

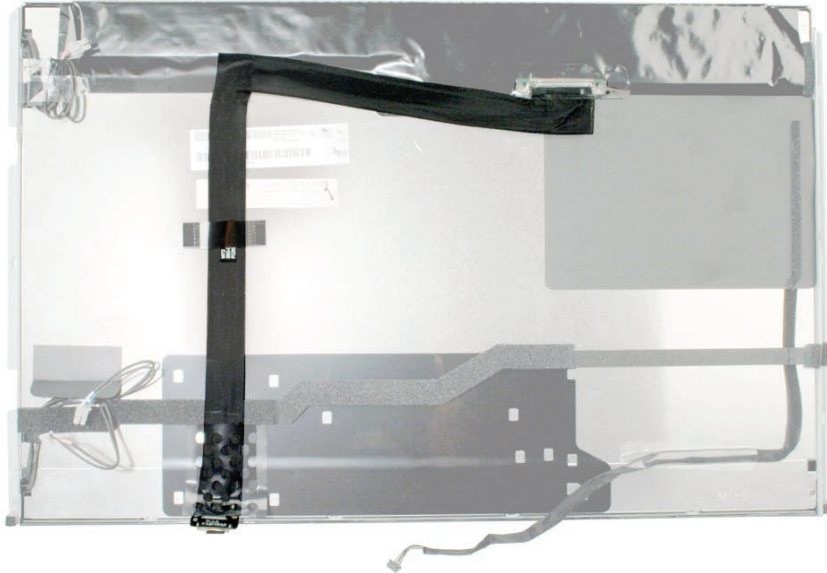


7. **Replacement Note:** If replacing the display panel, disconnect the LVDS cable from the panel. Transfer the cable to the replacement panel. A replacement panel includes the display panel mounting brackets, the foam strips and gaskets, the display temp sensor, two black cable stays to tape the cable to the display, and the display temp sensor cable. The sensor and sensor cable are included with the LCD panel, but they are also available separately.

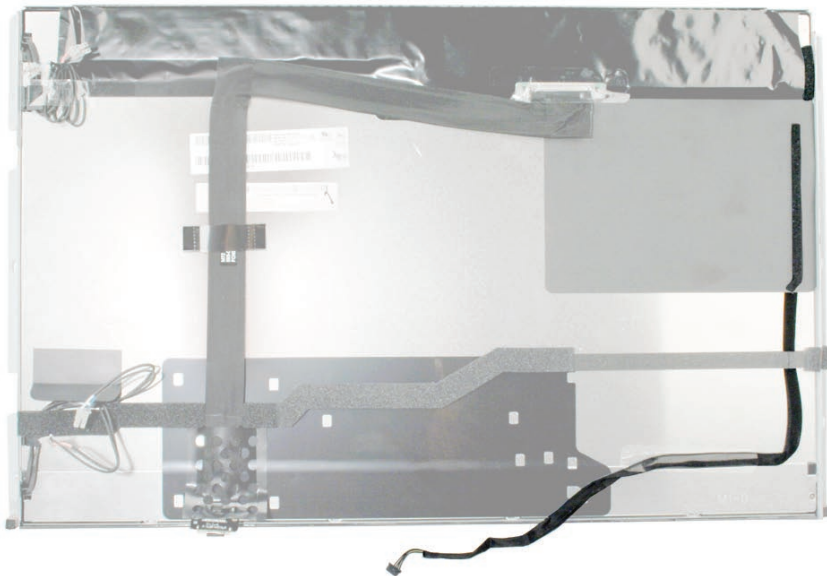


Replacing the Display Panel

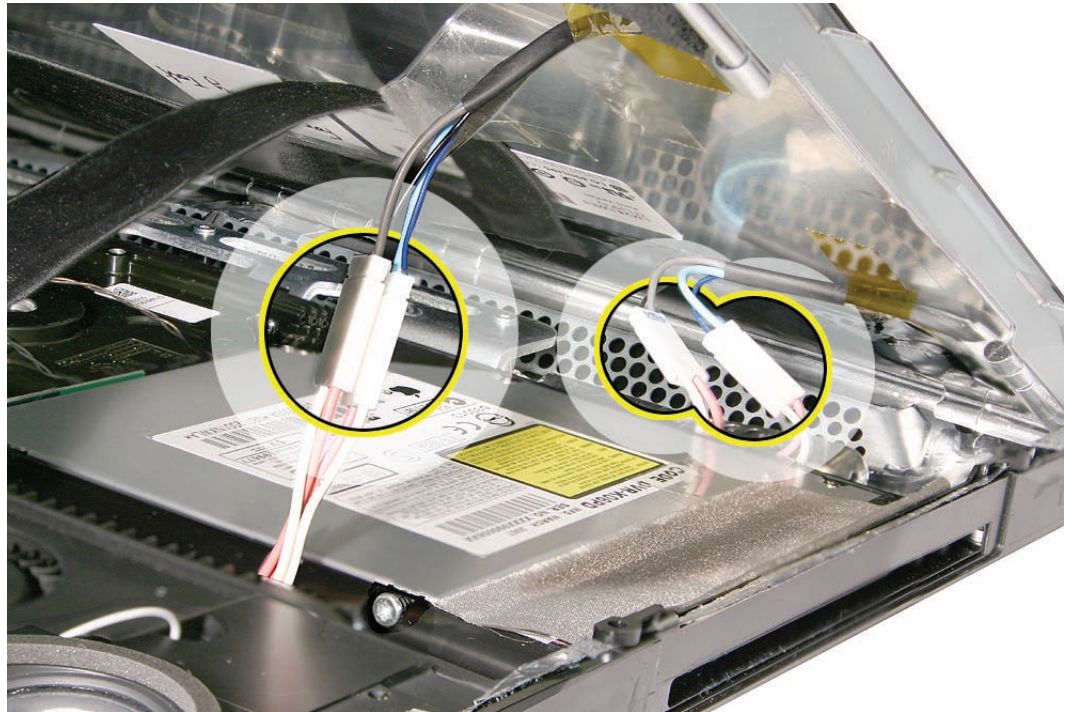
1. Remove the panel from the ESD bag. Connect the LVDS cable to the rear of the display panel if it was removed. Secure the LVDS cable with the black cable stays (tape).



2. Make sure the display temp sensor and the temp sensor cable are connected at the top of the display panel and that the foam gasket is covering the temp sensor.



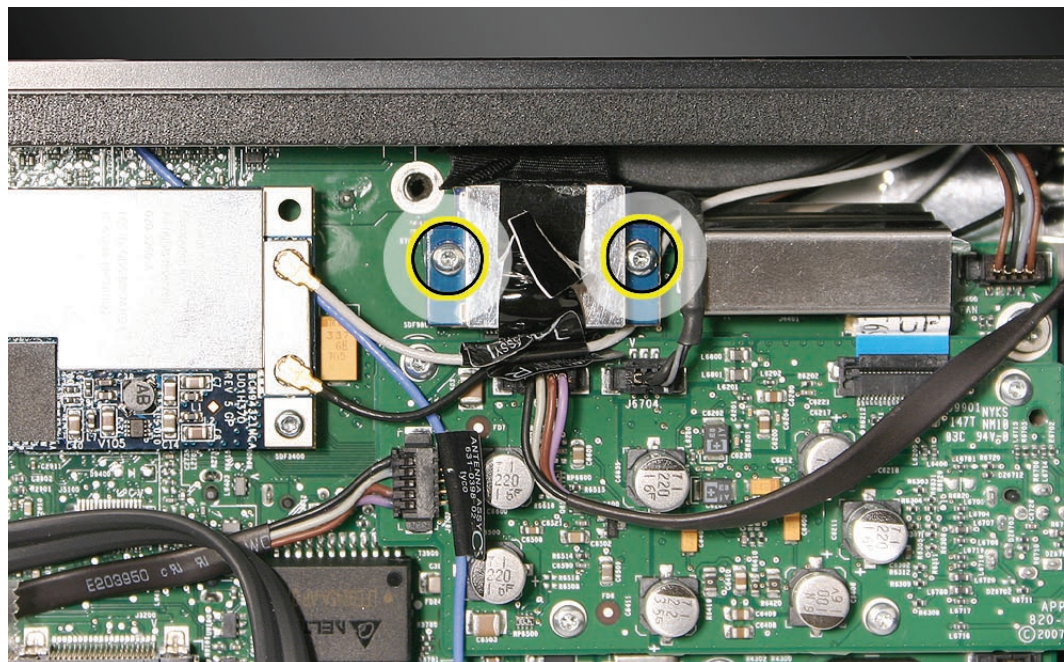
3. Lower the LCD panel into the rear housing.
4. Connect the inverter cables to the panel. Tuck the four inverter cables into the open cavities in the rear housing. **Important:** If the cables are not tucked into the open areas next to the optical drive, the LCD panel will not lower into place correctly making proper installation of the front bezel difficult.



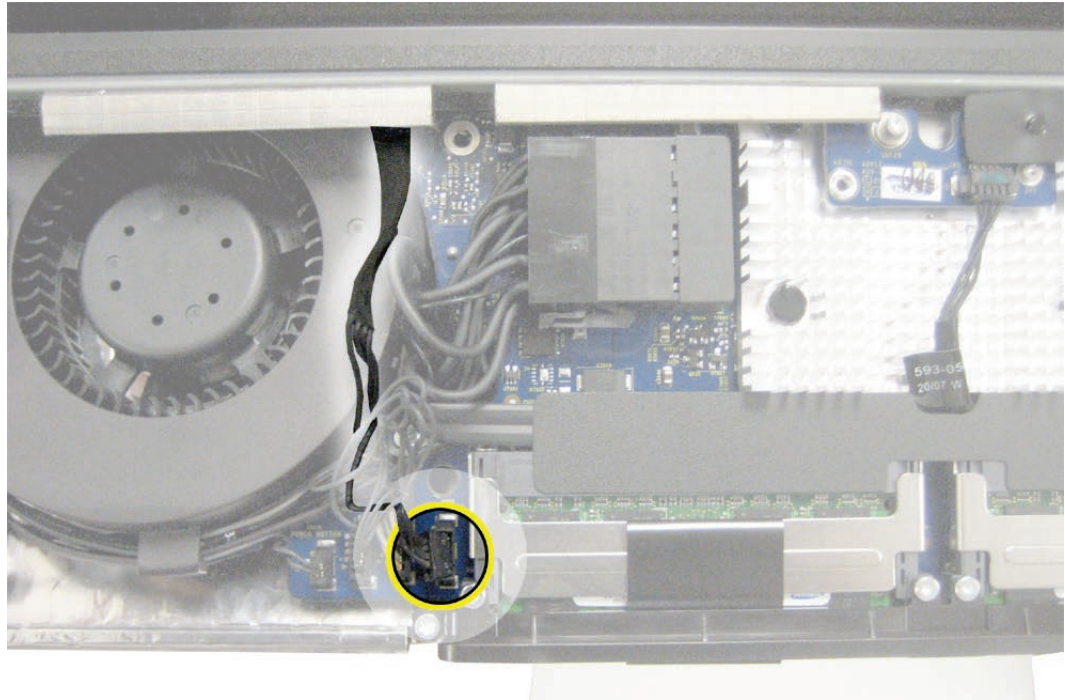
5. Connect the LVDS cable to the logic board. Replace the two T6 screws.



922-7010



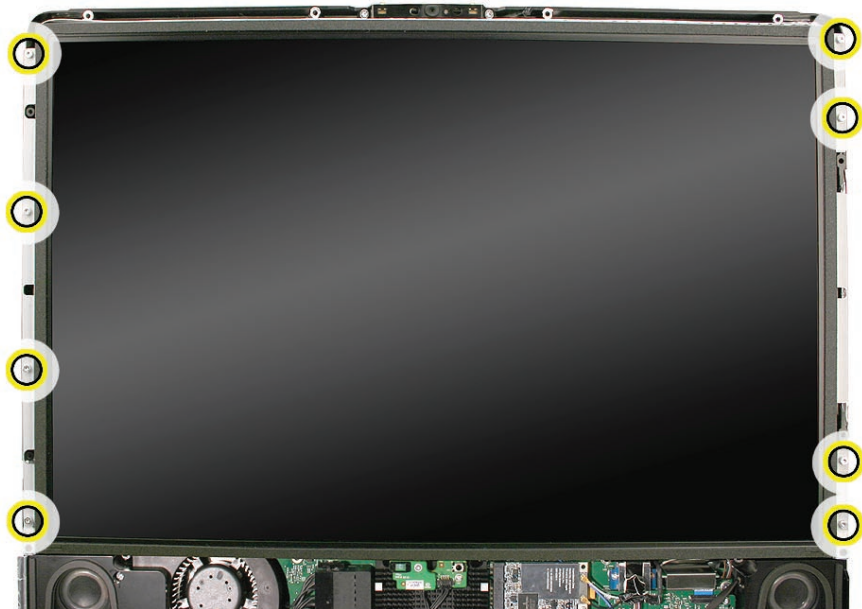
6. Connect the display temp sensor cable to the left side of the logic board.



7. Install the eight panel mounting screws.



922-8172



-
8. [Replace the front bezel.](#)
 9. [Clean and replace the glass panel.](#) **Note:** This step is very important. Follow the procedures to ensure the glass is clean and free of particles.
 10. [Replace the access door.](#)



LCD Temp Sensor Cable

Tools

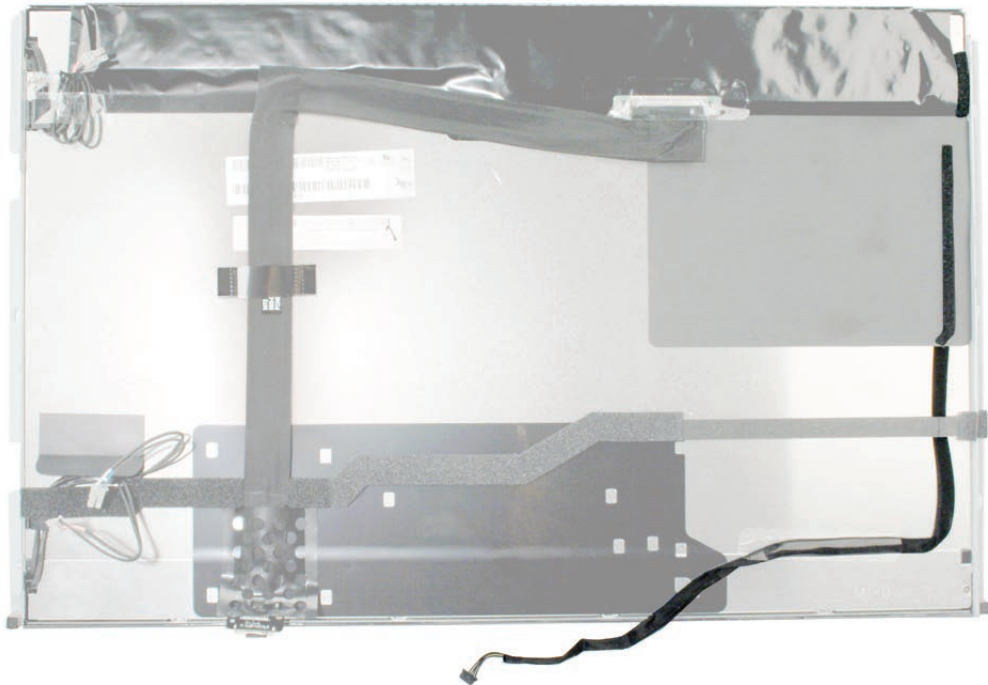
- A black stick or equivalent tool to peel the tape and insulator off the panel

Preliminary Steps

Before you begin, remove the following:

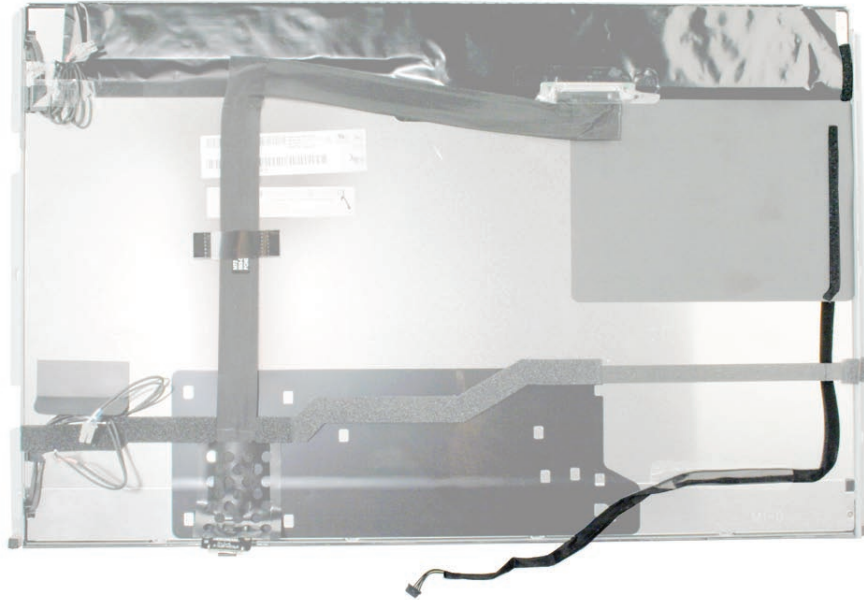
- [Access door](#)
- [Glass Panel](#)
- [Front bezel](#)
- [LCD display panel](#)

Part Location

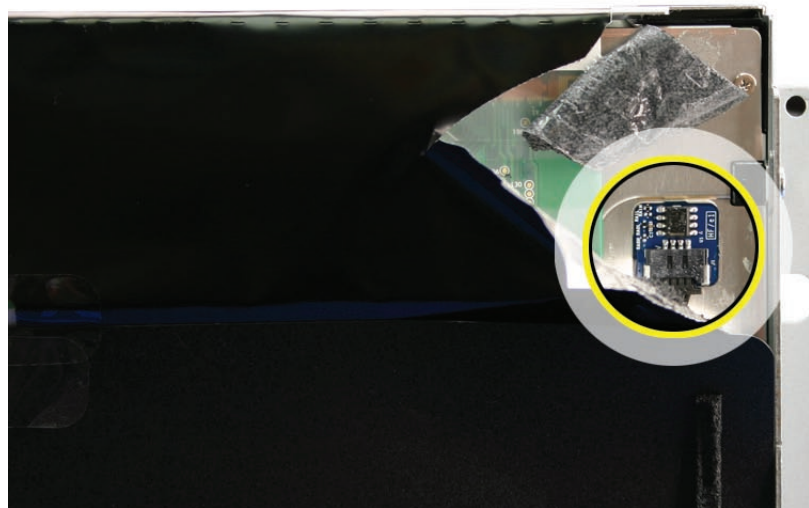


Removing the Display Temp Sensor Cable

1. Peel back any clear kapton tape securing the sensor cable to the panel.
2. Carefully peel back the black insulator on the right side of the panel to access the entire sensor cable.

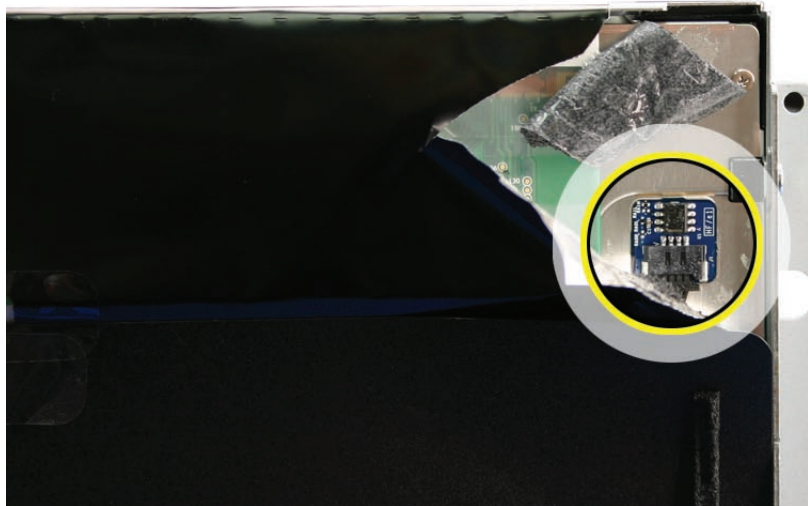


3. On the top right corner of the panel, peel back the black mylar shield and foam gasket covering the temp sensor. Disconnect the display temp sensor cable from the sensor.

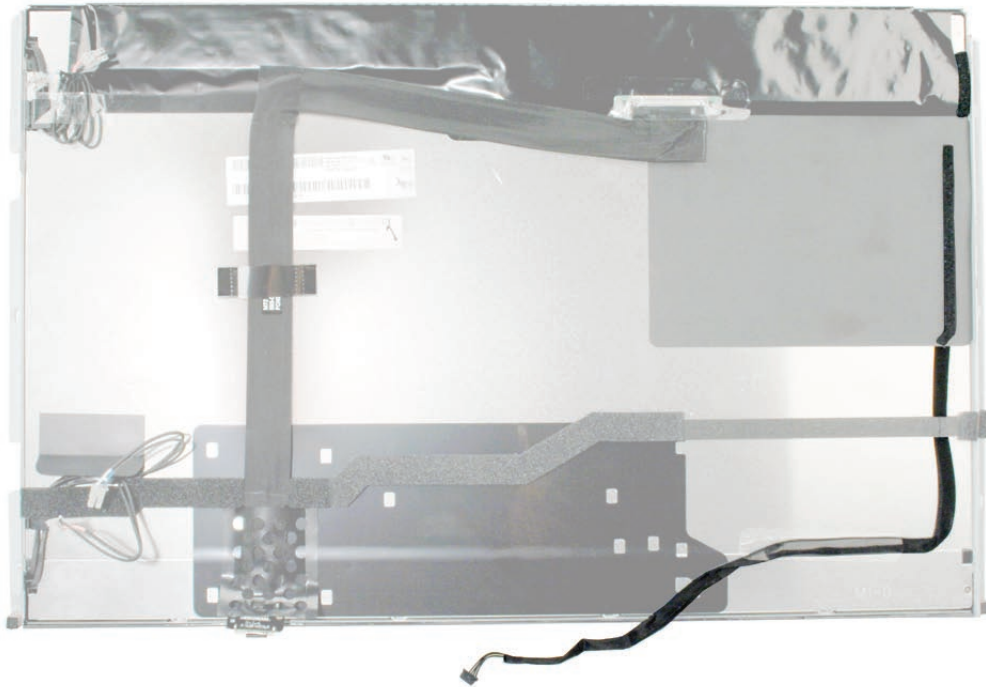


Replacing the Temp Sensor Cable

1. Connect the LCD temp sensor cable to the sensor at the top of the panel. Replace the foam gasket on top of the sensor. Cover the temp sensor with the black mylar shield. Press the mylar shield onto the panel.



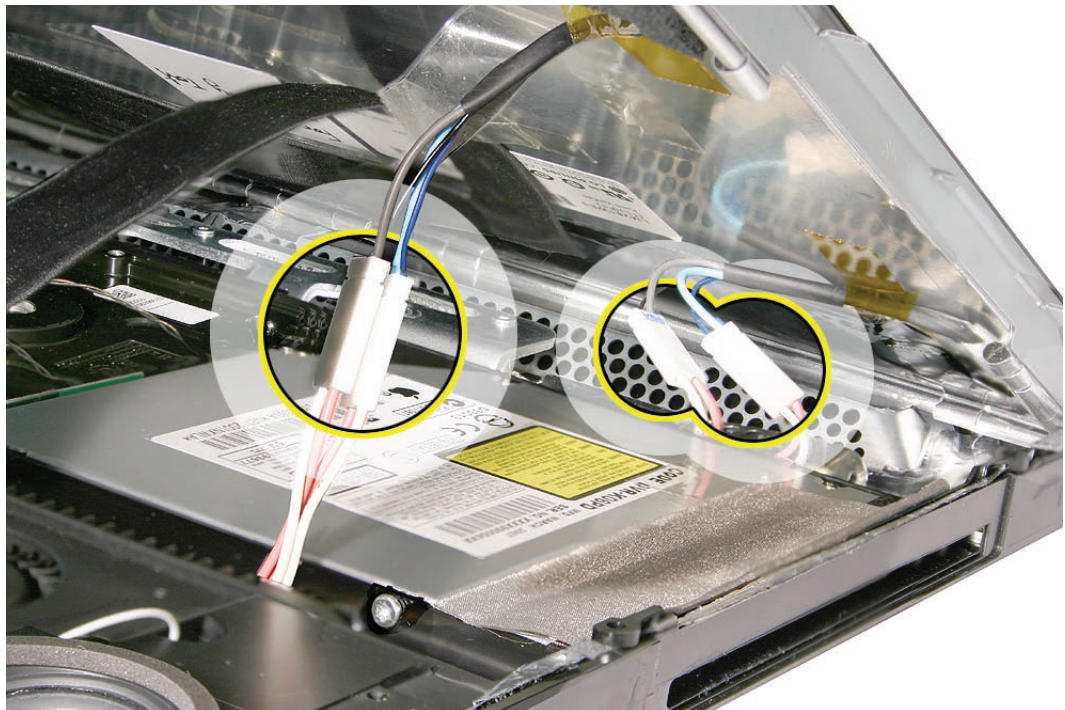
2. Route the cable along the right side on the back of the panel. Press the black sticky insulator over the top of the cable and the sensor. Replace any clear tape holding the cable in place on the panel.



-
3. Position the display panel into the rear housing. Make sure the LVDS cable and the LCD temp sensor cable don't get stuck under the panel as the panel is lowered into place.

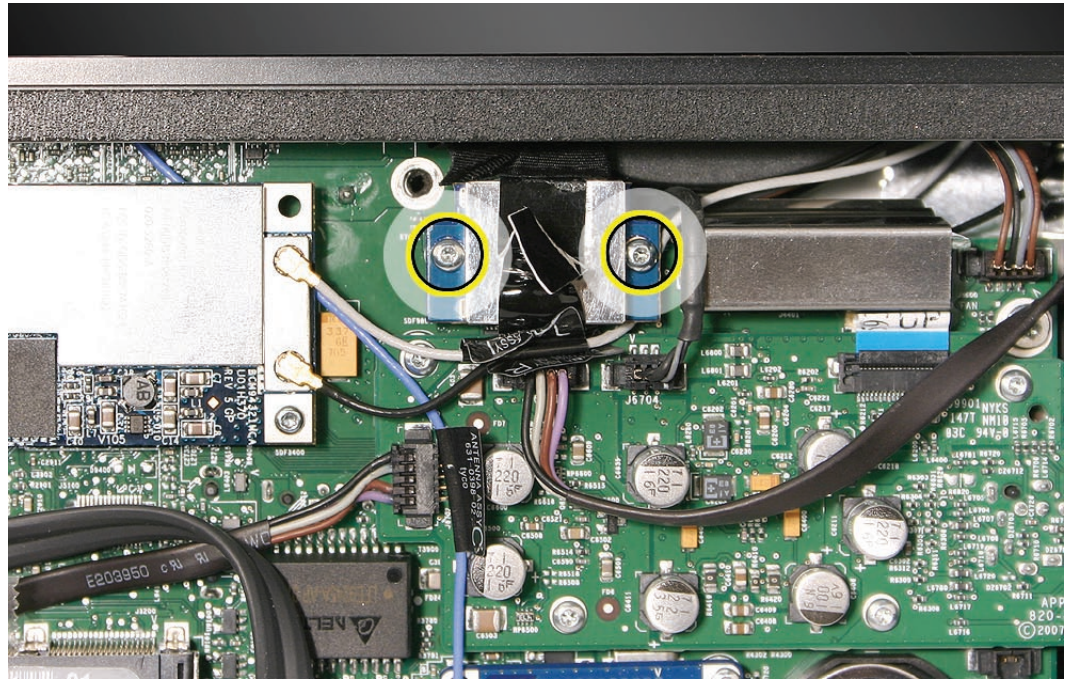


4. Lower the panel and connect the four inverter cables.

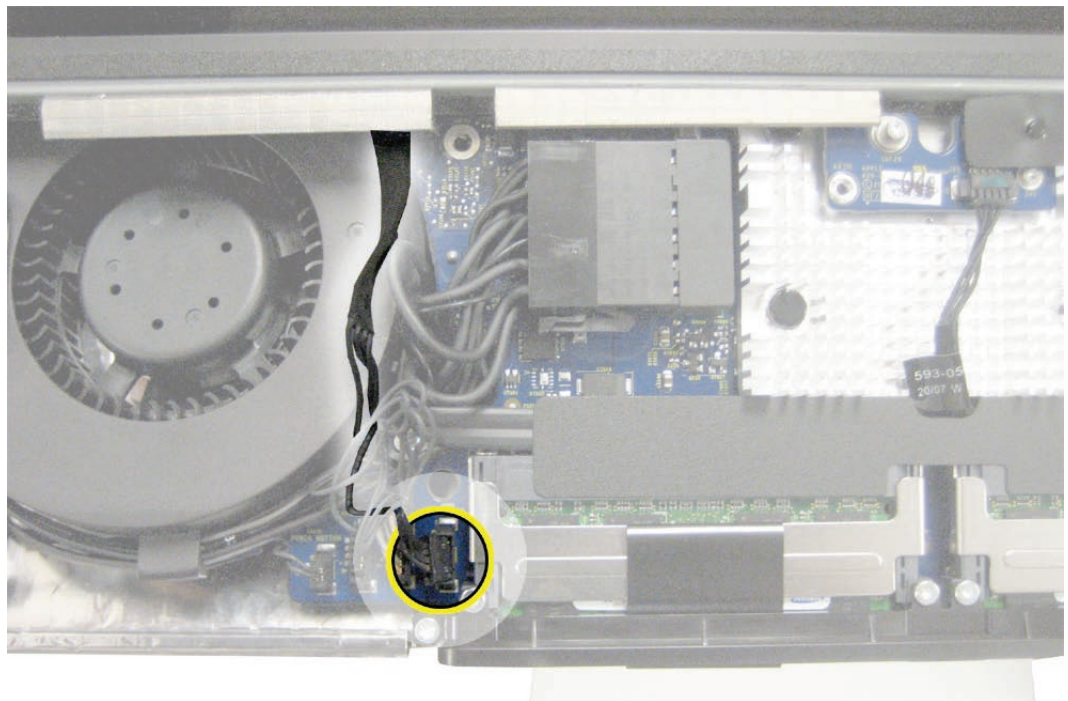


5. Connect the LVDS cable to the logic board and replace the two T6 screws.

922-7010



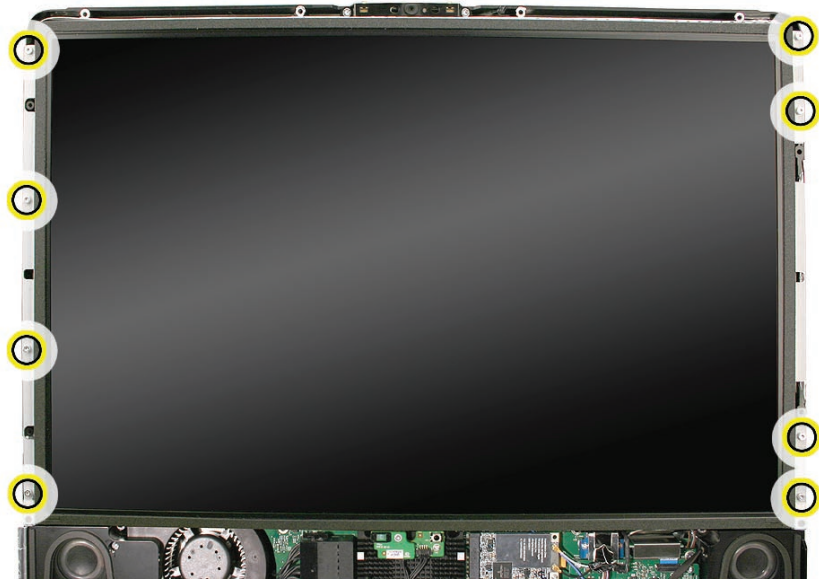
6. Connect the LCD temp sensor cable to the bottom left side of the logic board.



-
7. Replace the eight T8 display panel screws.



922-8172



8. [Replace the front bezel.](#)
9. [Clean and replace the glass panel.](#) **Note:** This step is very important. Follow the procedures to ensure the glass is clean and free of particles.
10. [Replace the access door.](#)



LVDS Cable

Tools

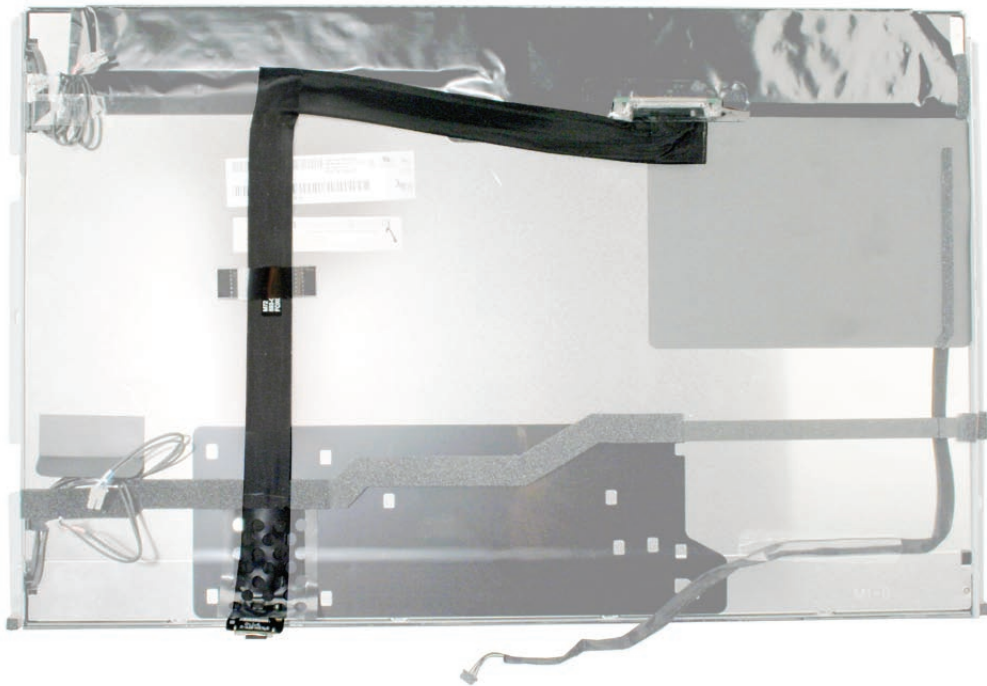
- Torx T6 screwdriver
- Soft, clean towel or cloth

Preliminary Steps

Before you begin, remove the following:

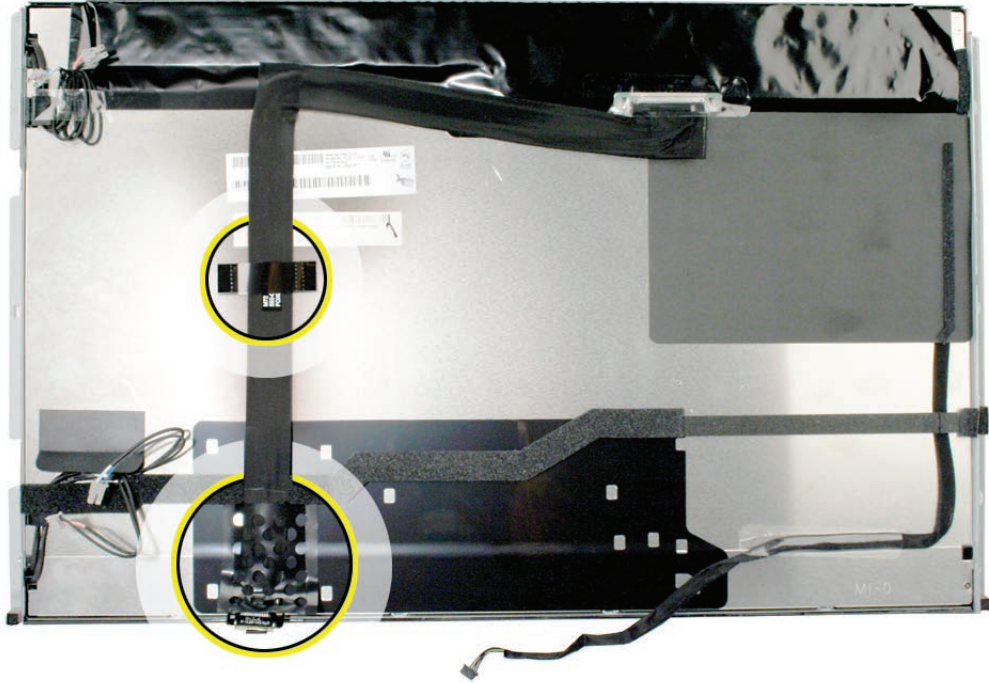
- [Access door](#)
- [Glass Panel](#)
- [Front bezel](#)
- [LCD display pane](#)

Part Location

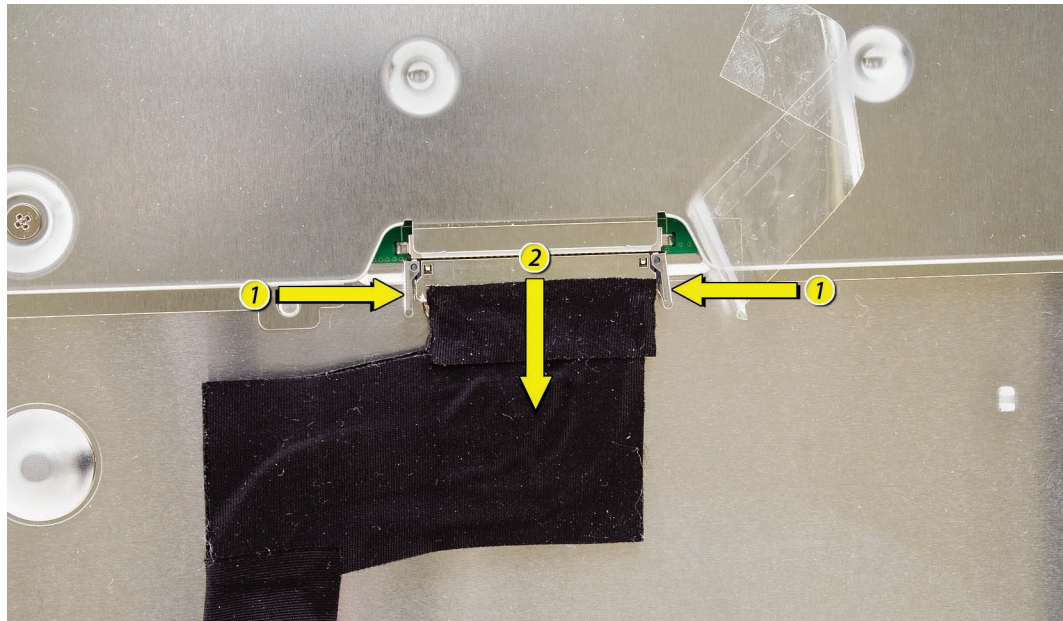


Removing the LVDS Cable

1. With the display face down on a soft cloth, peel up the two strips of black tape from the LVDS cable on the back of the display panel. Save the strips for use when reinstalling the LVDS cable.

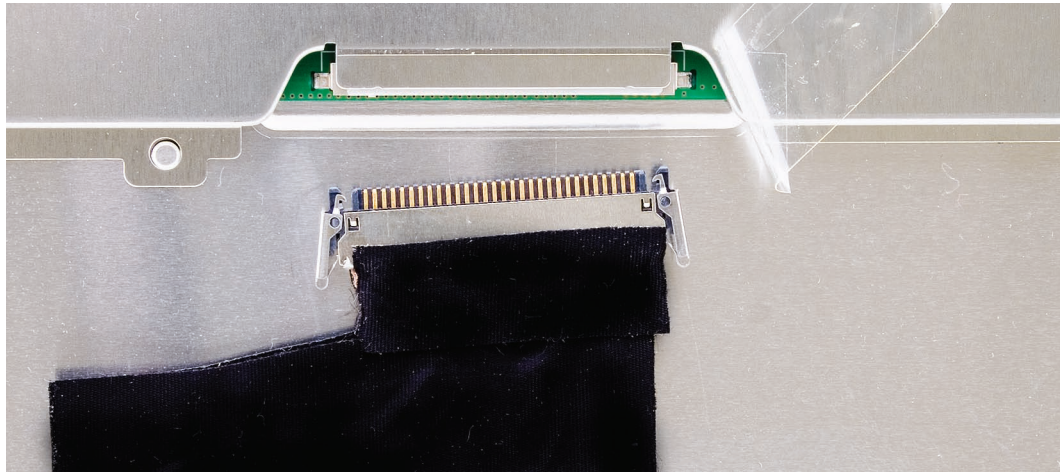


2. Remove the clear Kapton tape from the LVDS cable where it attaches to the panel.
3. Press in on the LVDS connector lock release clip (1) and then gently pull (2) to disconnect the LVDS cable from the back of the panel.

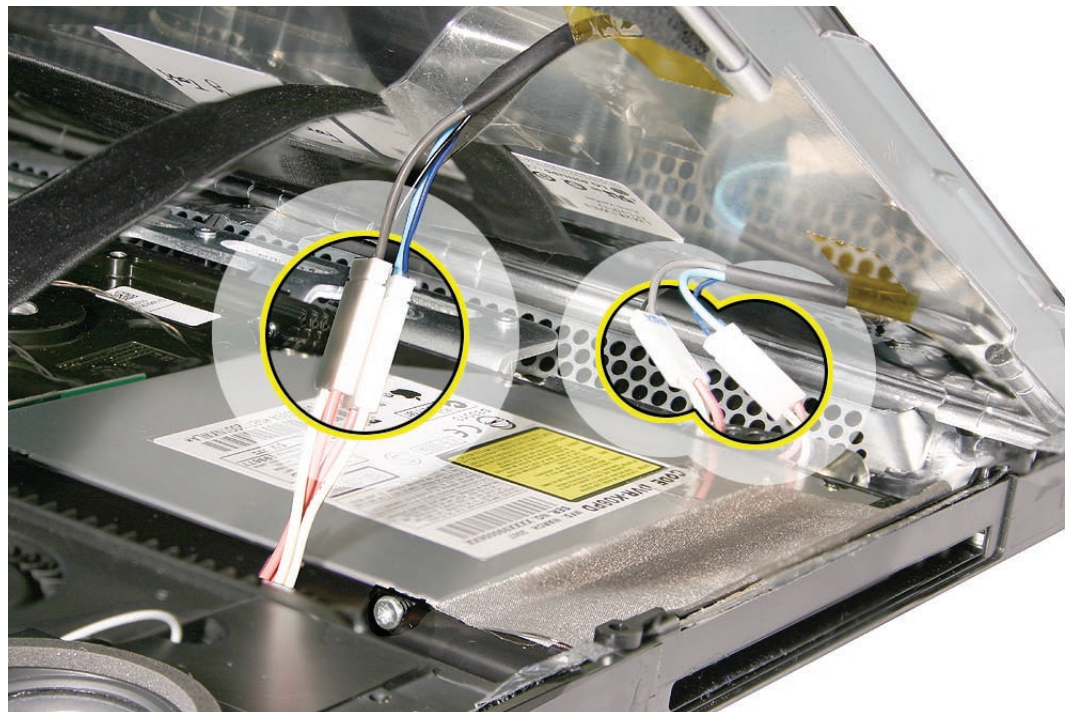


Replacing the LVDS Cable

1. Connect the LVDS cable to the rear of the display panel.

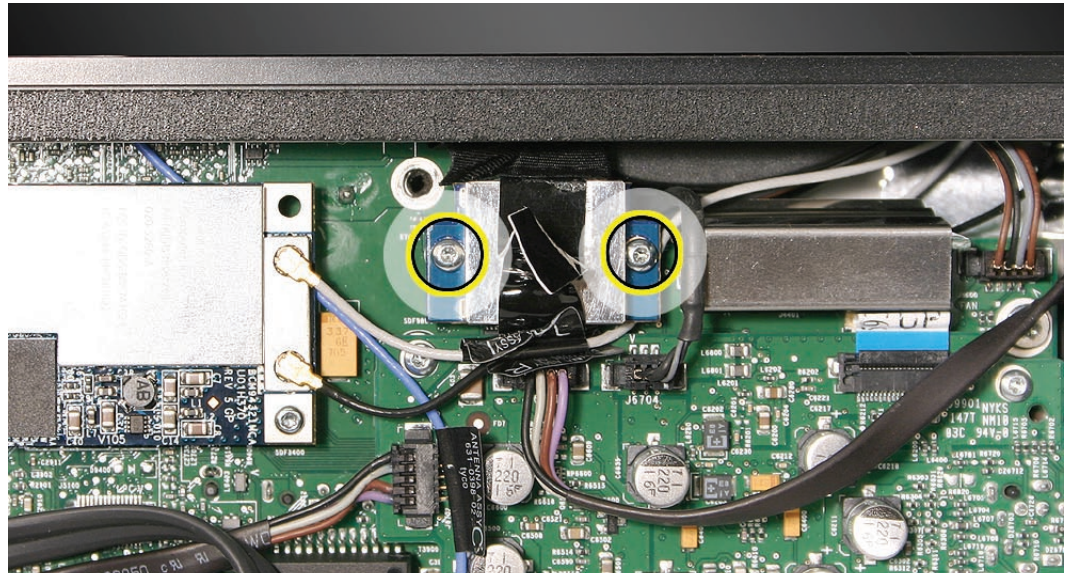


2. Replace the tape over the LVDS cable connector.
3. With the LVDS cable connected to the back of the display panel, lower the display panel into the rear housing.
4. Tuck the four inverter cables into the open cavities in the rear housing. **Important:** If the cables are not tucked into the open areas next to the optical drive, the LCD panel will not lower into place correctly making proper installation of the front bezel difficult.

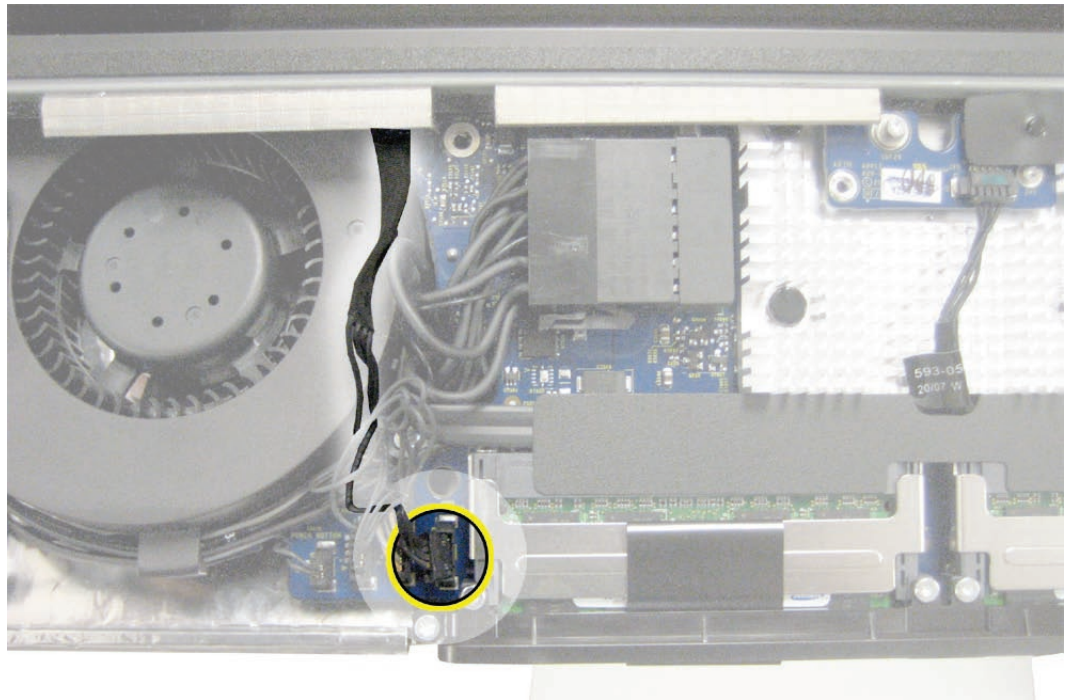


5. Connect the LVDS cable to the logic board. Replace the two T6 screws.

922-7010



6. Connect the display temp sensor cable to the left side of the logic board.



-
7. Install the eight panel mounting screws.



922-8172



8. [Replace the front bezel.](#)
9. [Clean and replace the glass panel.](#) **Note:** This step is very important. Follow the procedures to ensure the glass is clean and free of particles.
10. [Replace the access door.](#)



Inverter

Tools

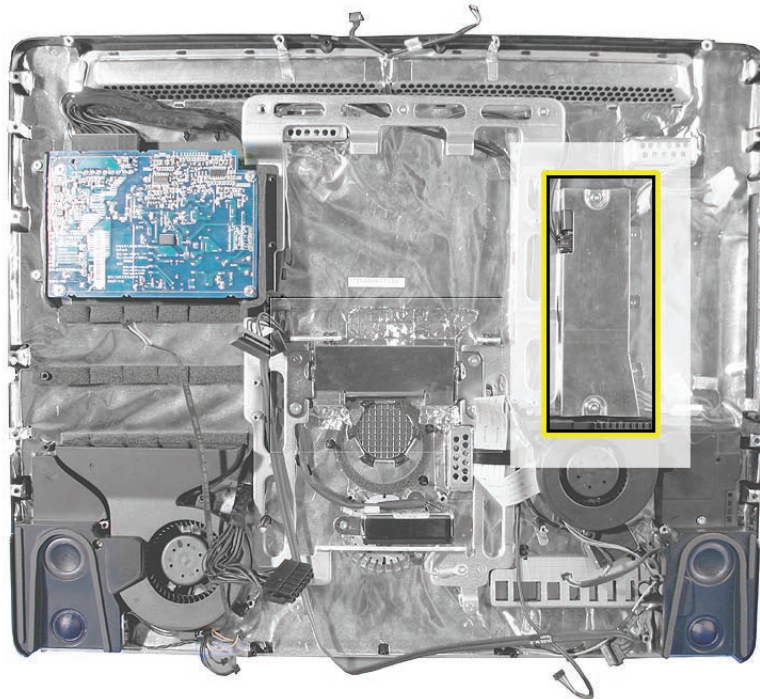
- Torx T10 screwdriver

Preliminary Steps

Before you begin, remove the following:

- [Access door](#)
- [Glass Panel](#)
- [Front bezel](#)
- [LCD display panel](#)
- [Optical drive](#)
- [Speaker, right](#)

Part Location

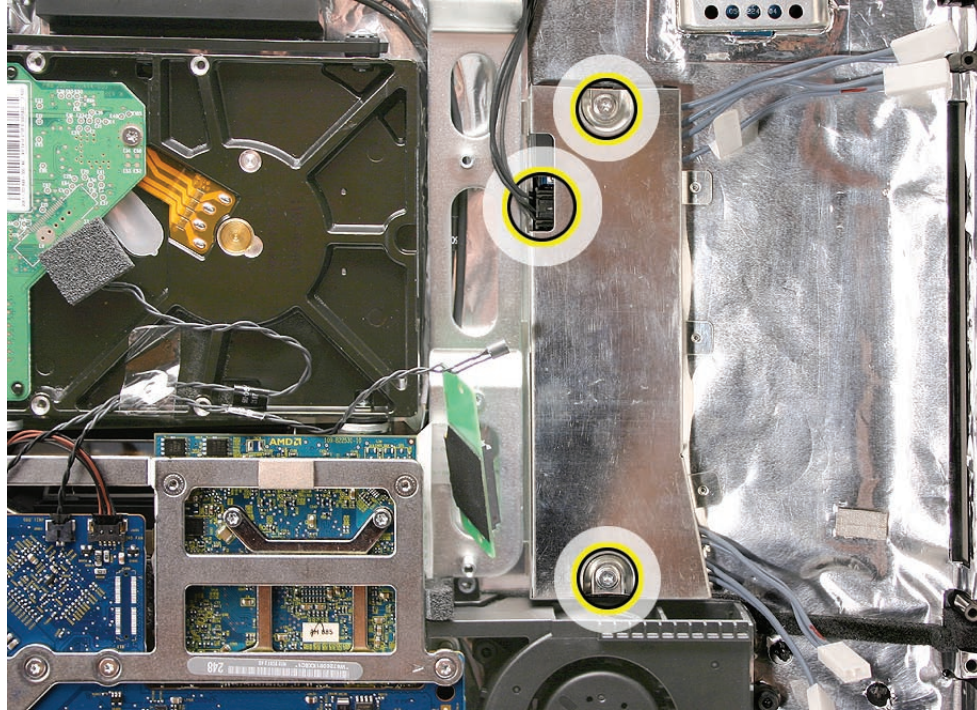


Removing the Inverter Cable

1. Remove the two 13mm self-tapping T10 screws from the inverter cover.
2. Disconnect the inverter power connector. Press down on the connector and pull it to the left (in the direction of the hard drive).
3. Lift the cover and inverter board out of the rear housing.



922-8251

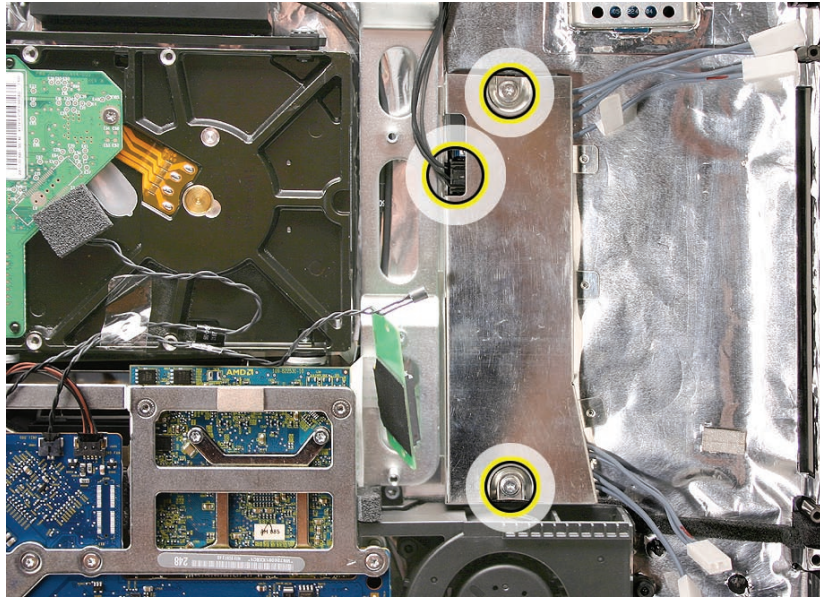


Replacing the Inverter Cable

1. Place the inverter cover over the inverter board.
2. Connect the inverter power cable to the inverter board.
3. Tuck metal tabs on the left side of the inverter cover under the chassis.
4. Line up the screws hole and attach the two inverter screws to the rear housing.

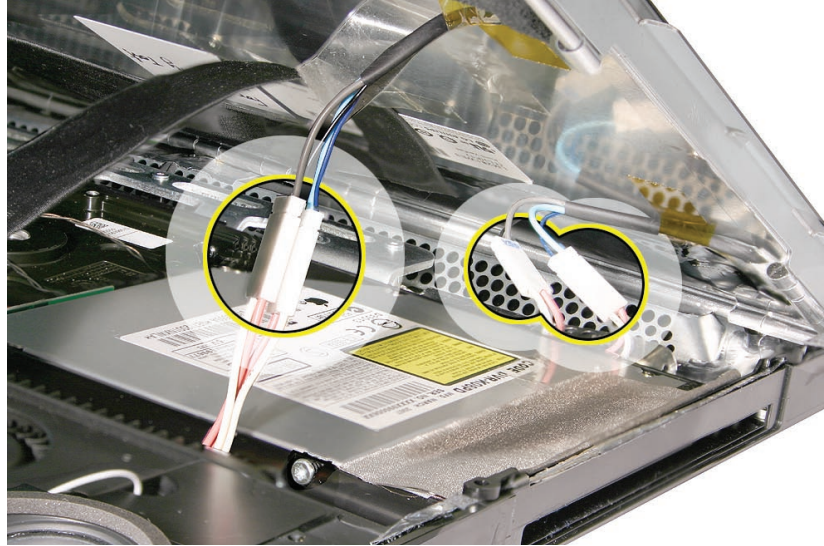


922-8251

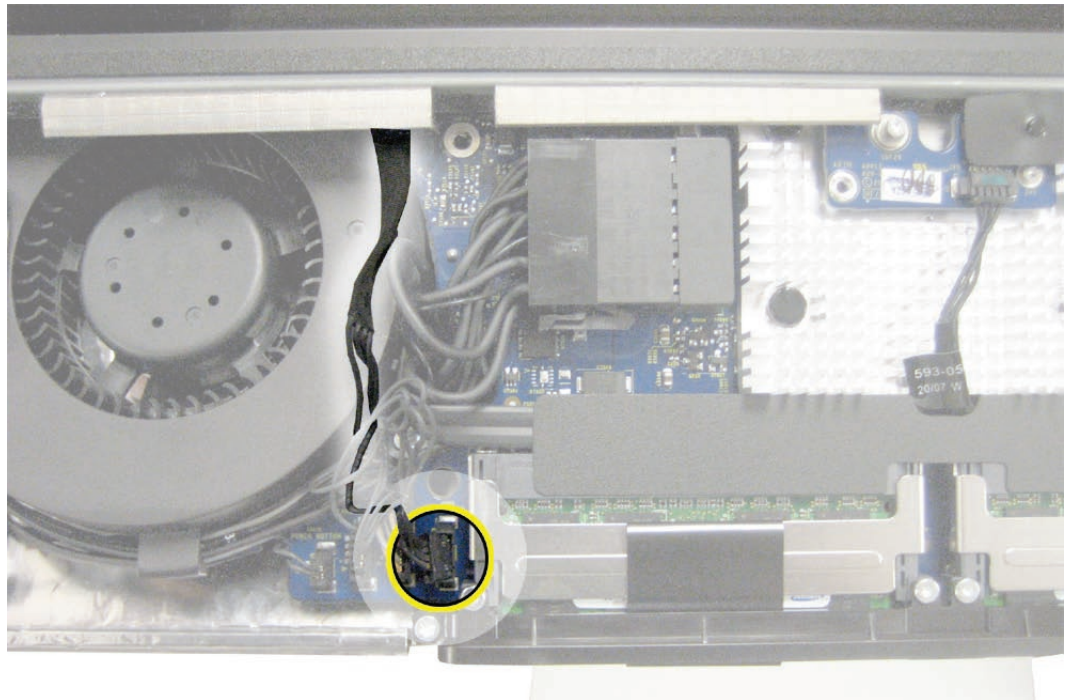


5. [Replace the optical drive.](#)
6. Lower the LCD display panel into the rear housing.

7. Connect the inverter cable to the panel. **Important:** Tuck the four inverter cables into the open cavities in the rear housing. If the cables are not tucked into the open areas next to the optical drive, the LCD panel will not lower into place correctly making proper installation of the front bezel difficult.

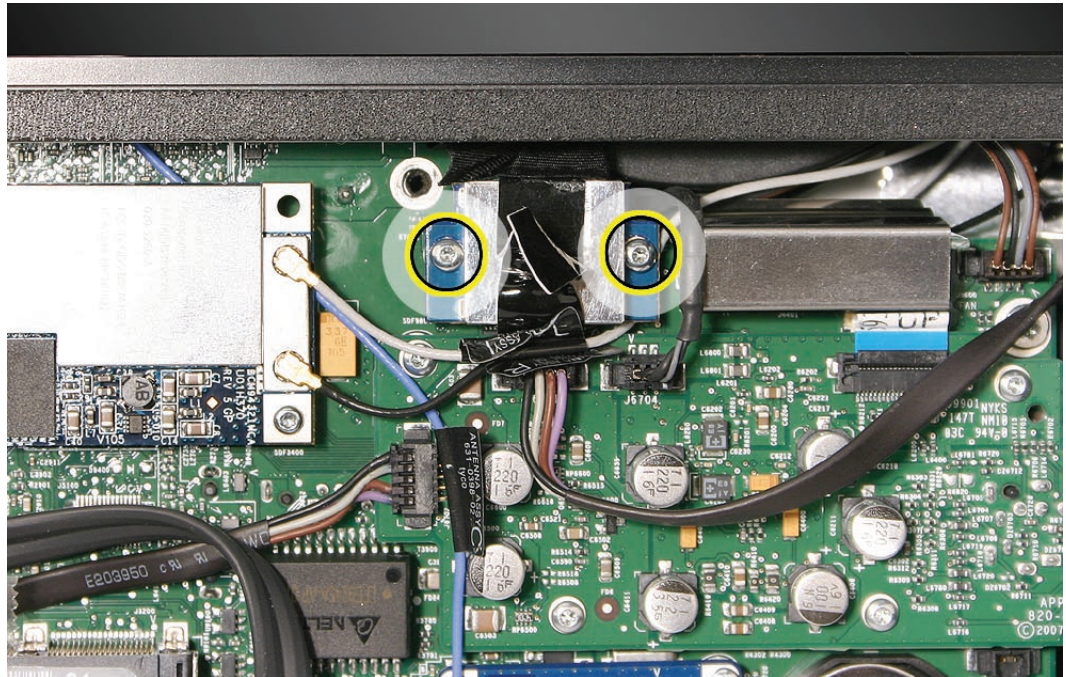


8. Connect the display temp sensor cable to the connector on the left side of the logic board (next to the memory slot).



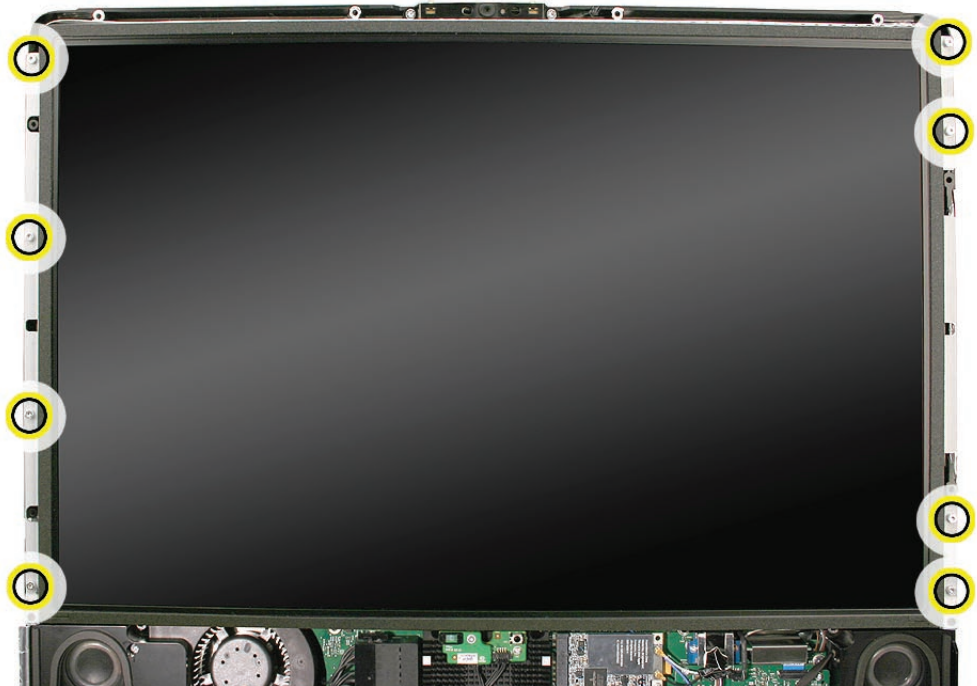
9. Connect the LVDS cable to the logic board. Replace the two T6 screws.


922-7010



10. Install the eight T8 display mounting screws.


922-8172



11. [Replace the front bezel.](#)

-
12. [Clean and replace the glass panel.](#) **Note:** This step is very important. Follow the procedures to ensure the glass is clean and free of particles.
 13. [Replace the access door.](#)



Speaker, Right

Tools

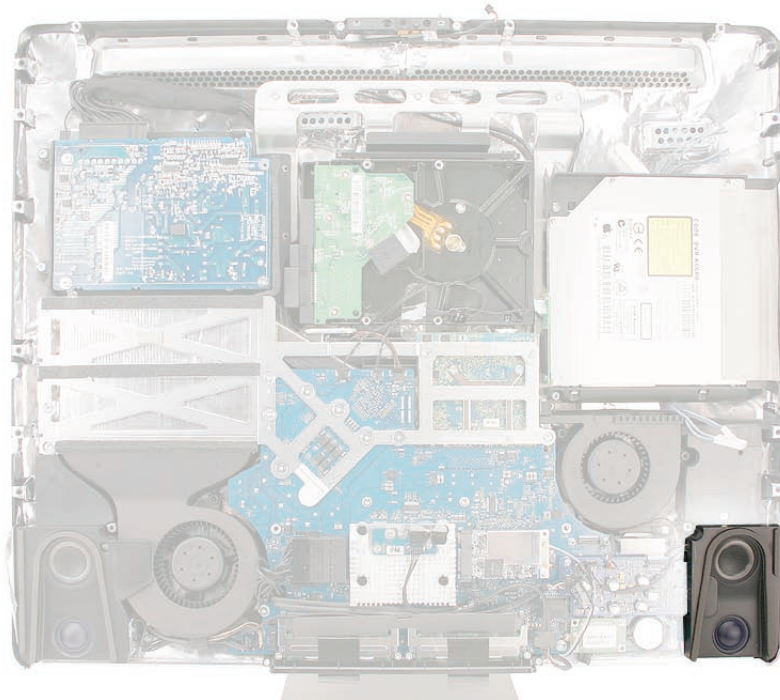
- Torx T10 screwdriver

Preliminary Steps

Before you begin, remove the following:

- [Access door](#)
- [Glass Panel](#)
- [Front bezel](#)
- [LCD display panel](#)

Part Location

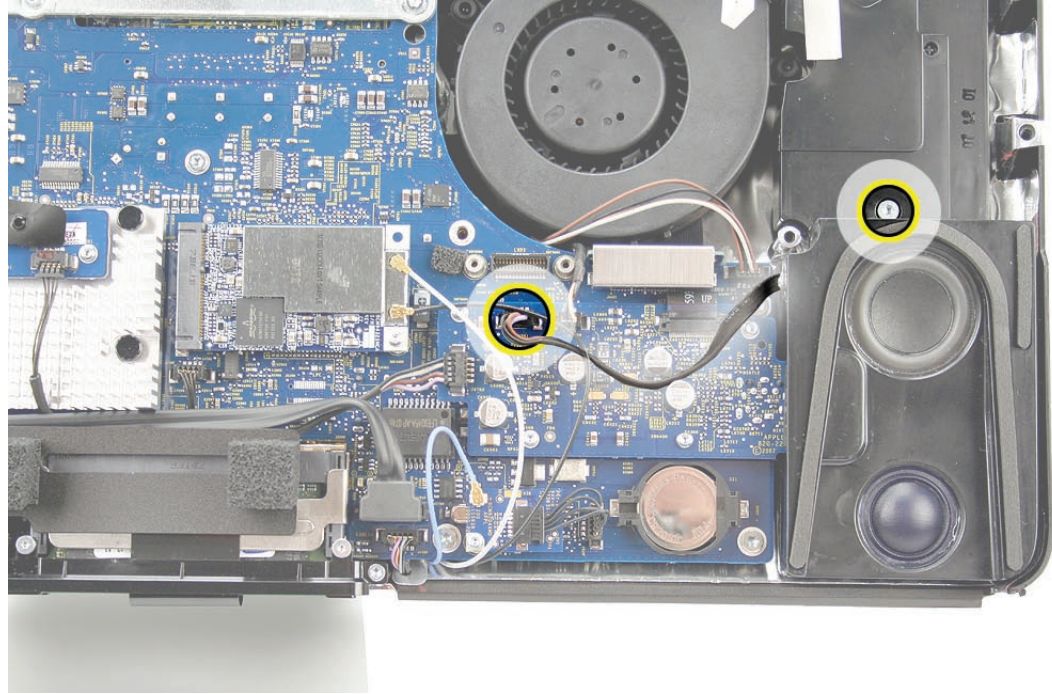


Removing the Right Speaker

1. Remove the T10 screw from the right speaker.
2. Disconnect the speaker cable from the audio board.



922-7066



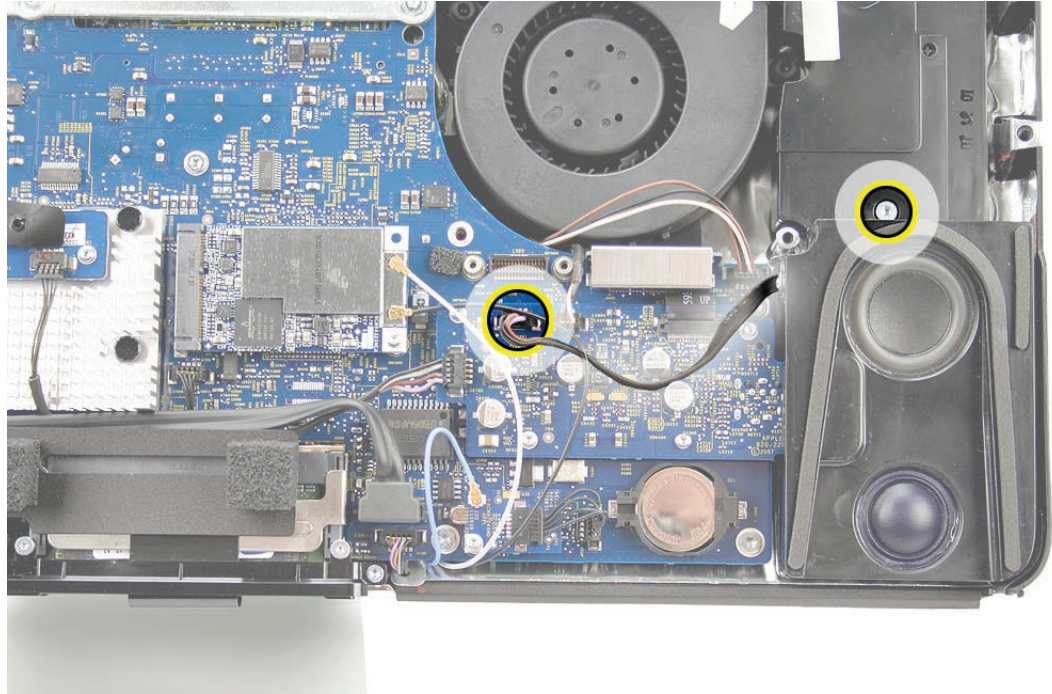
3. Pull the speaker up and out of the computer assembly.

Replacing the Right Speaker

1. Install the speaker in the computer assembly.
2. Connect the speaker cable to the audio board. Replace the T10 screw on the speaker.



922-7066



3. [Replace the display panel.](#)
4. [Replace the front bezel.](#)
5. [Clean and replace the glass panel.](#) **Note:** This step is very important. Follow the procedures to ensure the glass is clean and free of particles.
6. [Replace the access door..](#)



Speaker, Left

Tools

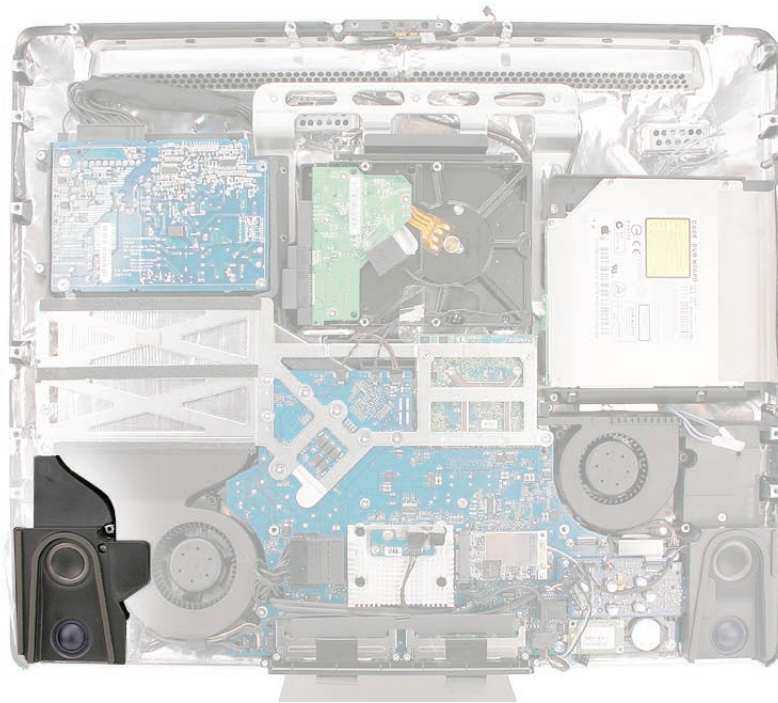
- Torx T10 screwdriver

Preliminary Steps

Before you begin, remove the following:

- [Access door](#)
- [Glass Panel](#)
- [Front bezel](#)
- [LCD display panel](#)

Part Location

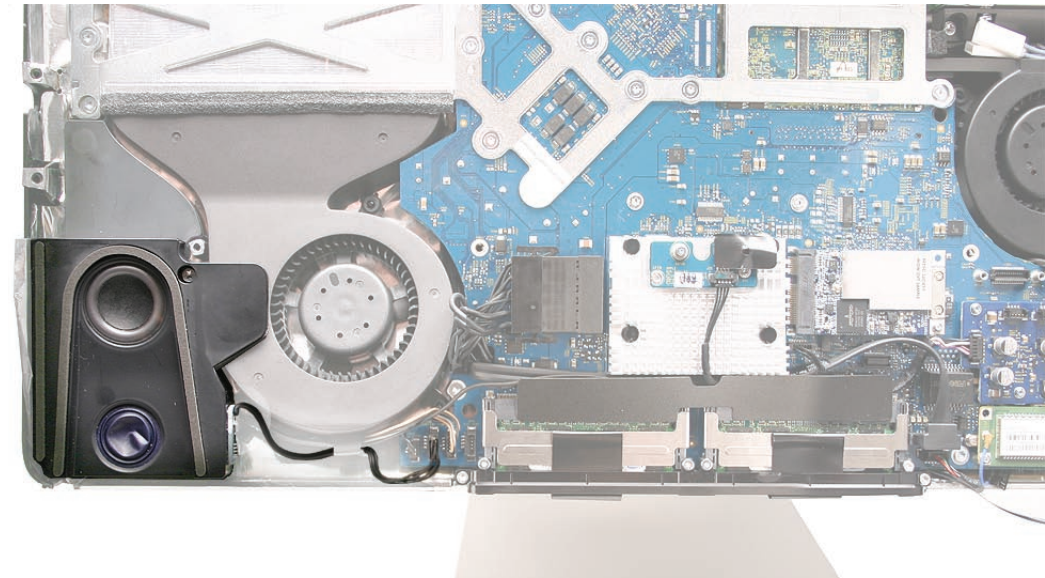


Removing the Left Speaker

1. Using a T10 torx screwdriver, remove the long screw from the left speaker.
Replacement Note: The longer of the two speaker mounting screws is used to secure the left speaker; the shorter screw secures the right speaker.



922-8249



3. Disconnect the left speaker cable. The cable runs under the black plastic cable holder (above the memory slot) and connects to the audio board on the right side of the logic board.



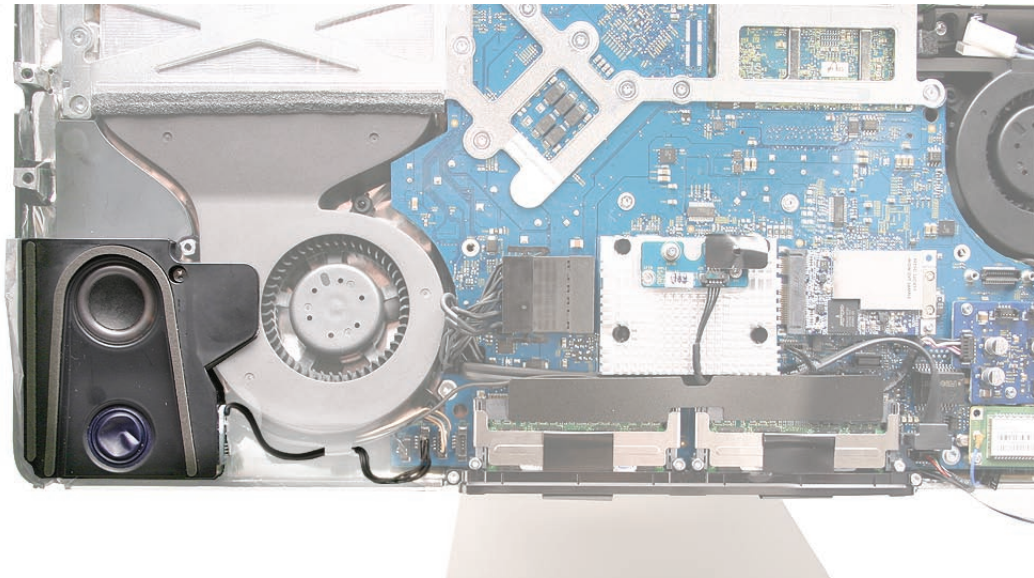
-
4. Disconnect the speaker from the audio board.
 5. Lift the speaker out of the rear housing.

Replacing the Left Speaker

1. Install the speaker in the rear housing. Secure the left speaker with the longer of the two speaker mounting screws. Route the speaker cable under the tab on the CPU fan and under the black cable holder.
2. Connect the ambient temp sensor cable to the left side of the logic board.



922-8249



3. Connect the speaker cable to the audio board. Route the cable under the black cable holder (above the memory slot).



-
4. [Replace the display panel.](#)
 5. [Replace the front bezel.](#)
 6. [Clean and replace the glass panel.](#) **Note:** This step is very important. Follow the procedures to ensure the glass is clean and free of particles.
 7. [Replace the access door..](#)



Ambient Temperature Sensor Cable

Tools

The only tool required for this procedure is a black stick (or other nonconductive plastic or nylon tool).

Preliminary Steps

Before you begin, remove the following:

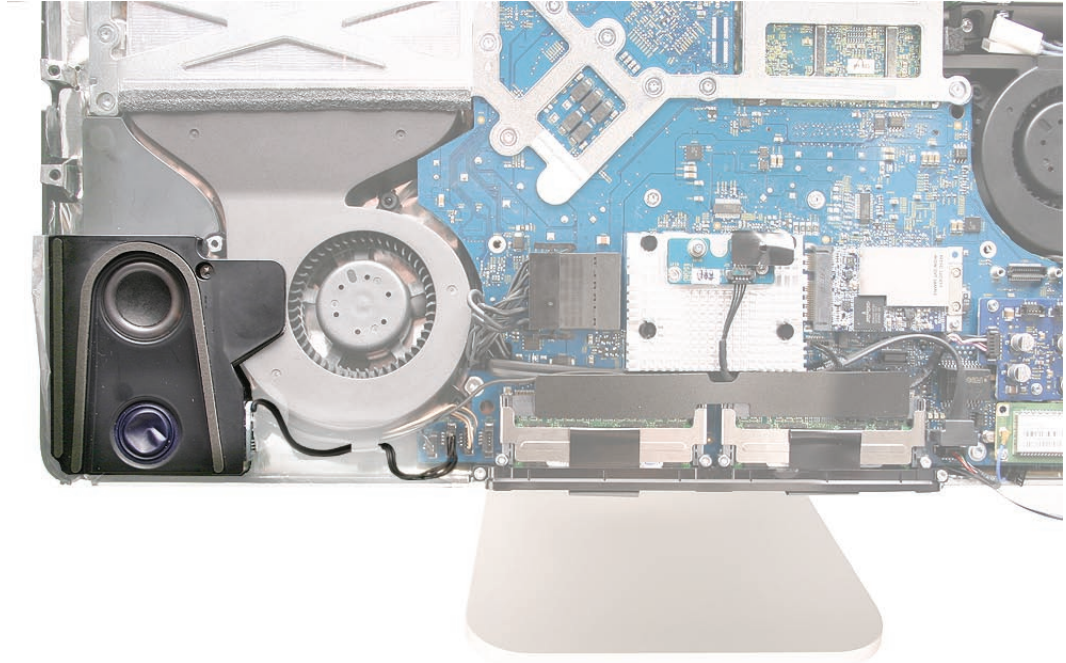
- [Access door](#)
- [Glass Panel](#)
- [Front bezel](#)
- [LCD display panel](#)
- [Speaker, left](#)

Part Location

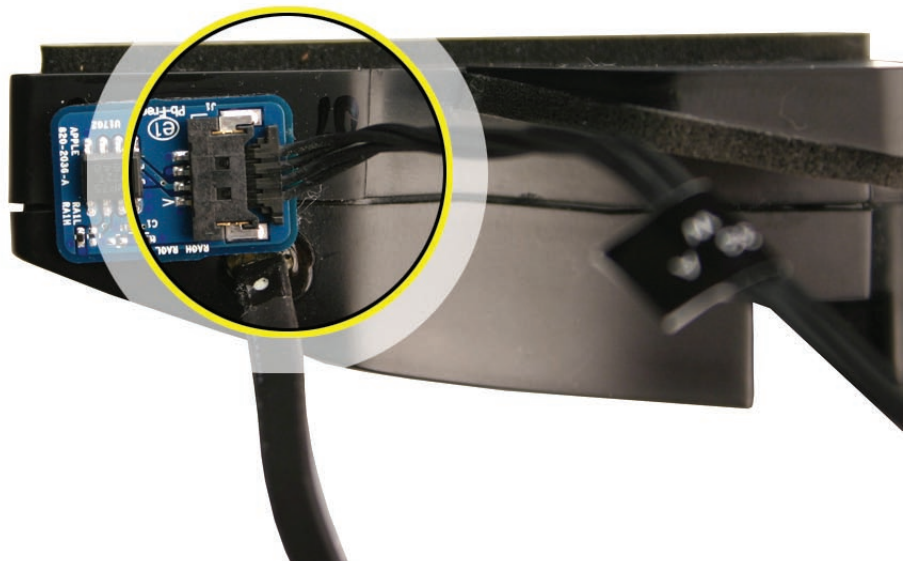


Removing the Ambient Temperature Sensor Cable

1. Note the cable routing from the left speaker to the logic board. The cable tucks under the tab on the CPU fan.

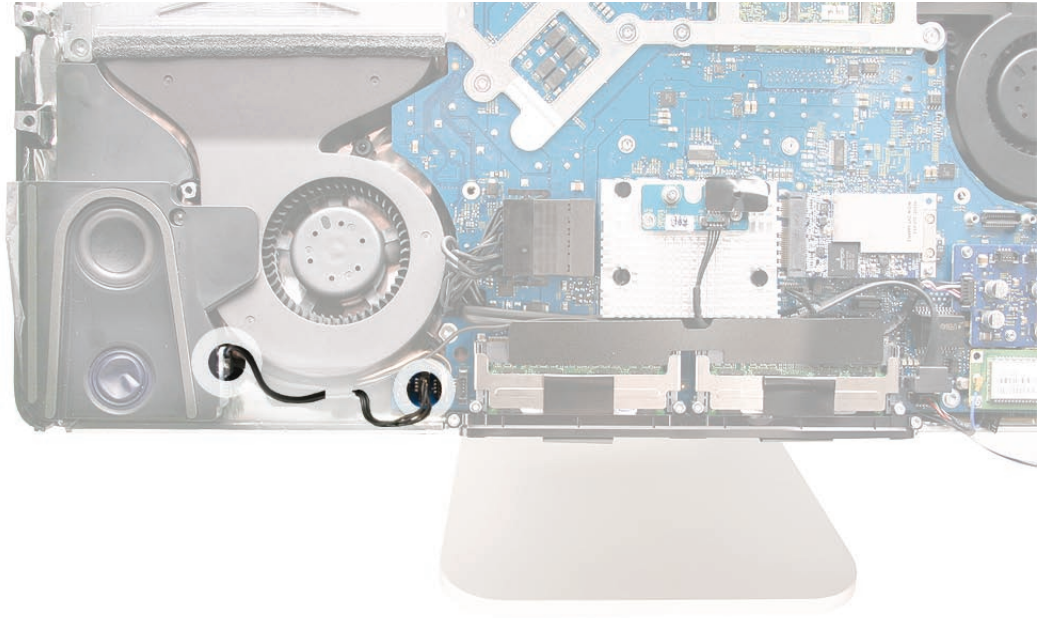


2. Disconnect the cable from the sensor board on the speaker and the connector on the logic board. **Note:** The cable is offered separately as a service part.



Replacing the Ambient Temperature Sensor Cable

1. Connect the cable to the sensor board on the left speaker and to the logic board.



2. [Replace the front bezel.](#)
3. [Clean and replace the glass panel.](#) **Note:** This step is very important. Follow the procedures to ensure the glass is clean and free of particles.
4. [Replace the access door.](#)



Ambient Temperature Sensor

Tools

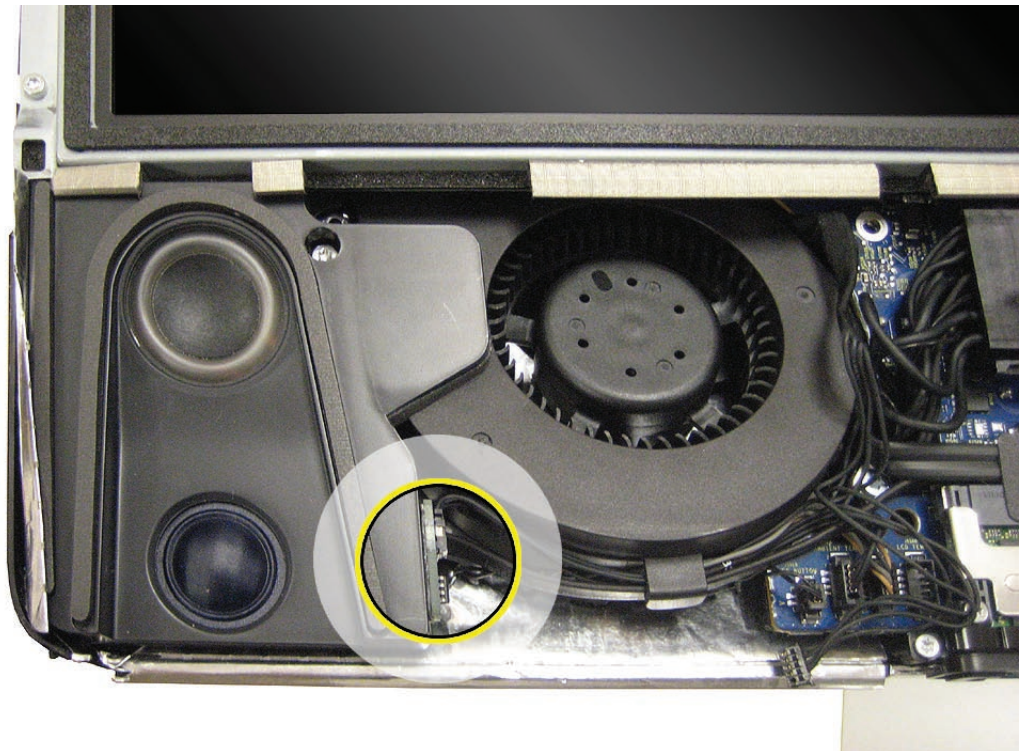
- A black stick to remove the sensor off the speaker

Preliminary Steps

Before you begin, remove the following:

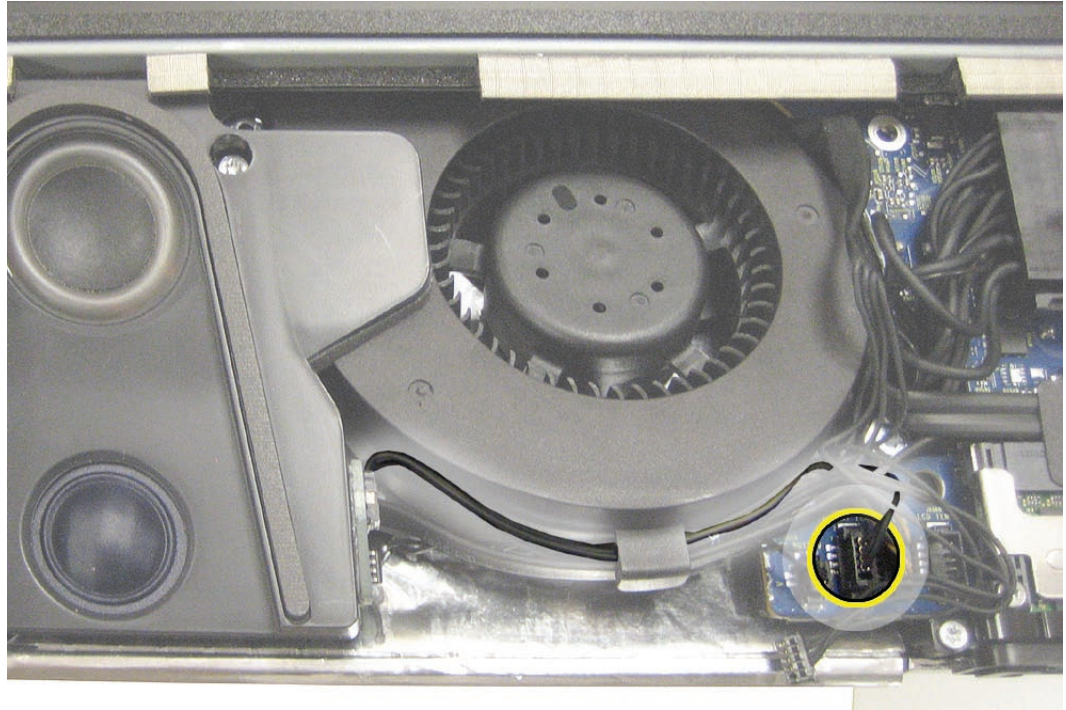
- [Access door](#)
- [Glass Panel](#)
- [Front bezel](#)
- [LCD display panel](#)
- [Speaker, left](#)

Part Location



Removing the Ambient Temperature Sensor

1. Disconnect the ambient temperature sensor cable from the logic board, and remove the left speaker if you haven't done so already.

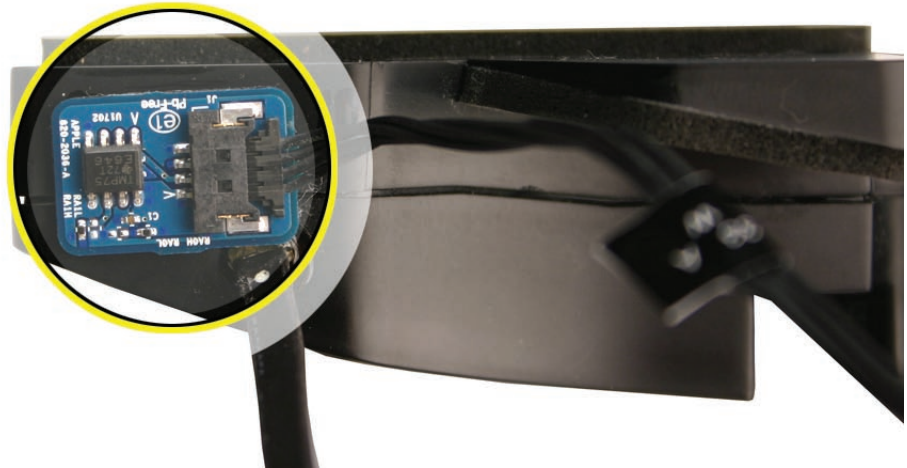


2. Disconnect the ambient temperature sensor cable from the left speaker.
3. Use a black stick to remove the sensor from the adhesive on the side of the speaker.

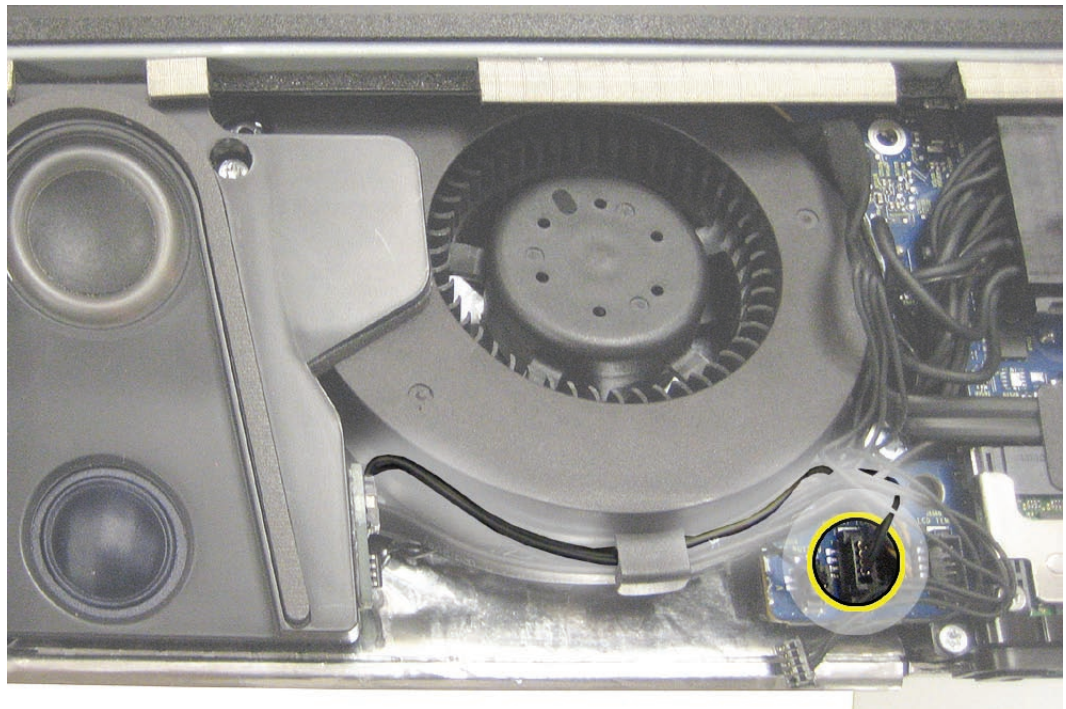


Replacing the Ambient Temperature Sensor

1. Attach the temp sensor to the left speaker. Connect the temperature sensor cable to the sensor. Replace the left speaker and speaker screw.



2. Connect the temperature sensor cable to the logic board connector.



3. [Replace the display panel.](#)
4. [Replace the front bezel.](#)

-
5. [Clean and replace the glass panel.](#) **Note:** This step is very important. Follow the procedures to ensure the glass is clean and free of particles.
 6. [Replace the access door.](#)



Optical Drive Fan

Tools

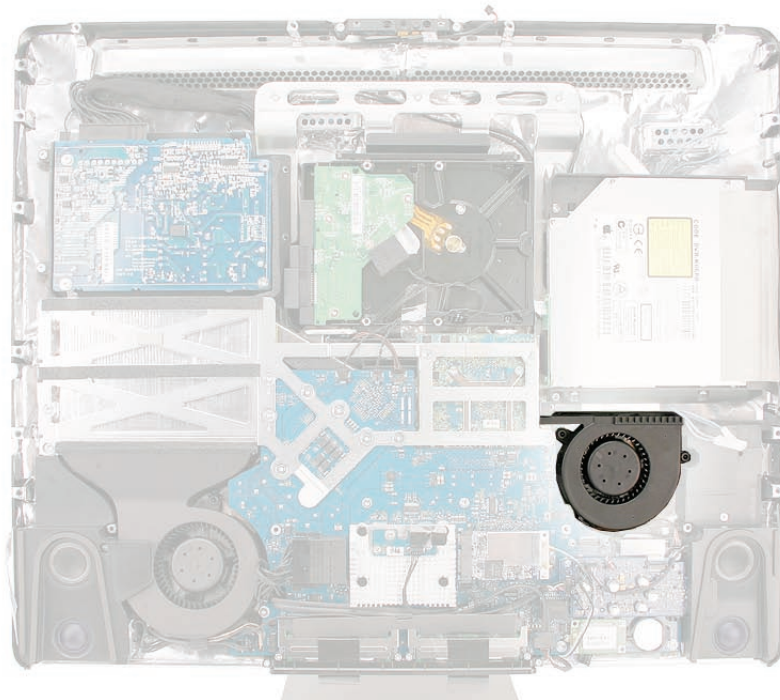
- No tools are required to remove the optical drive fan.

Preliminary Steps

Before you begin, remove the following:

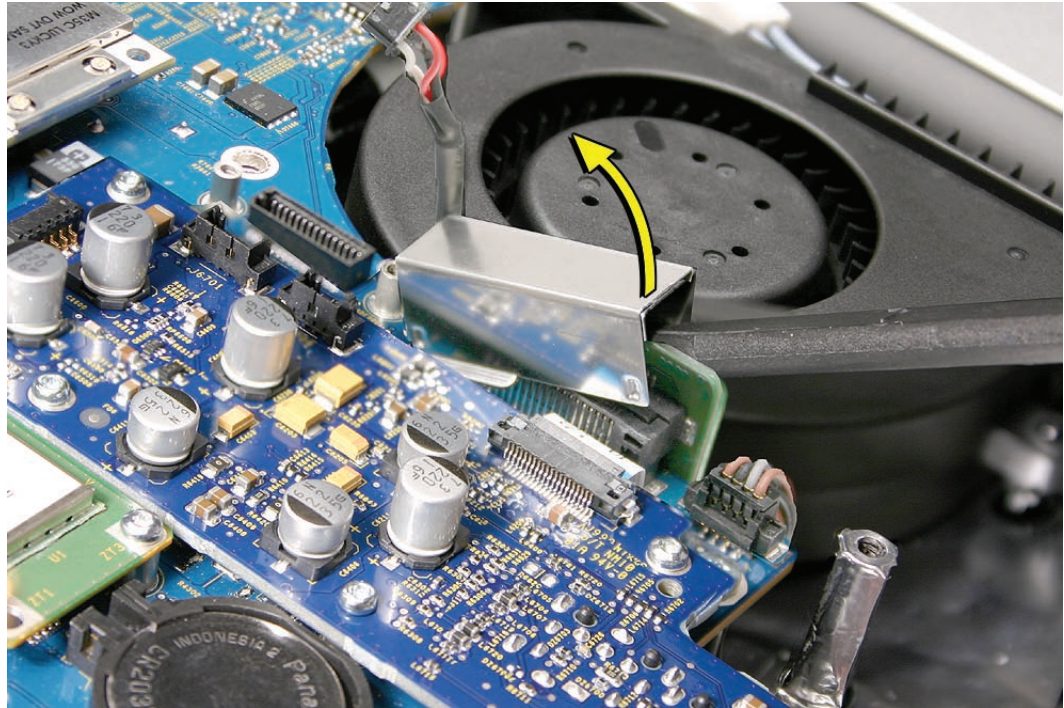
- [Access door](#)
- [Glass panel](#)
- [Front bezel](#)
- [LCD display panel](#)
- [Optical drive](#)

Part Location

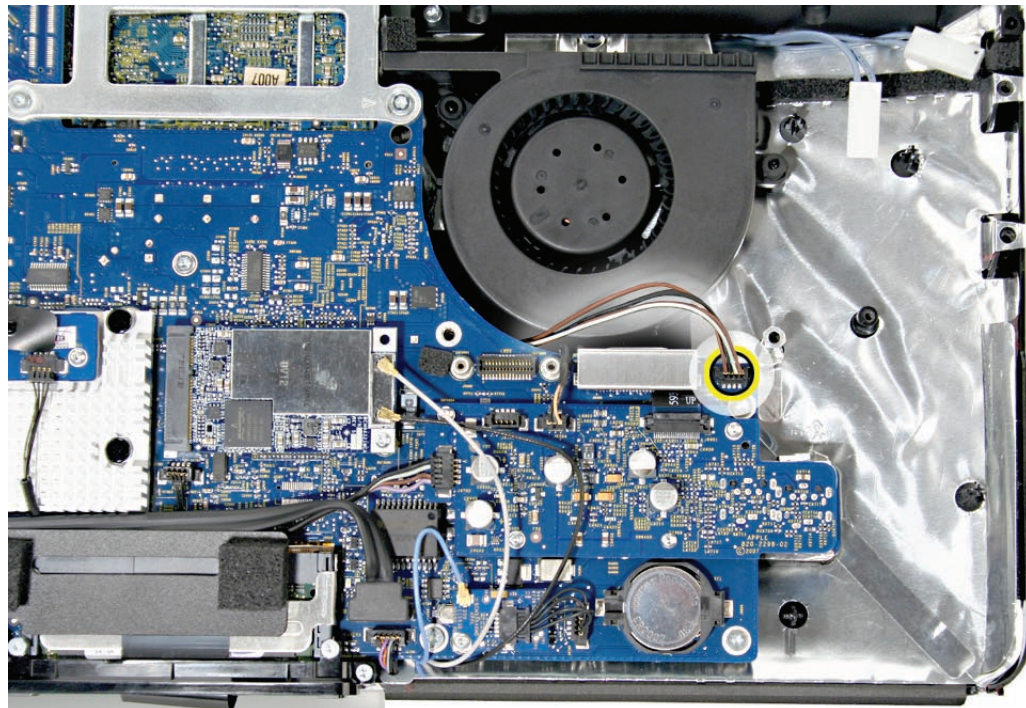


Removing the Optical Drive Fan

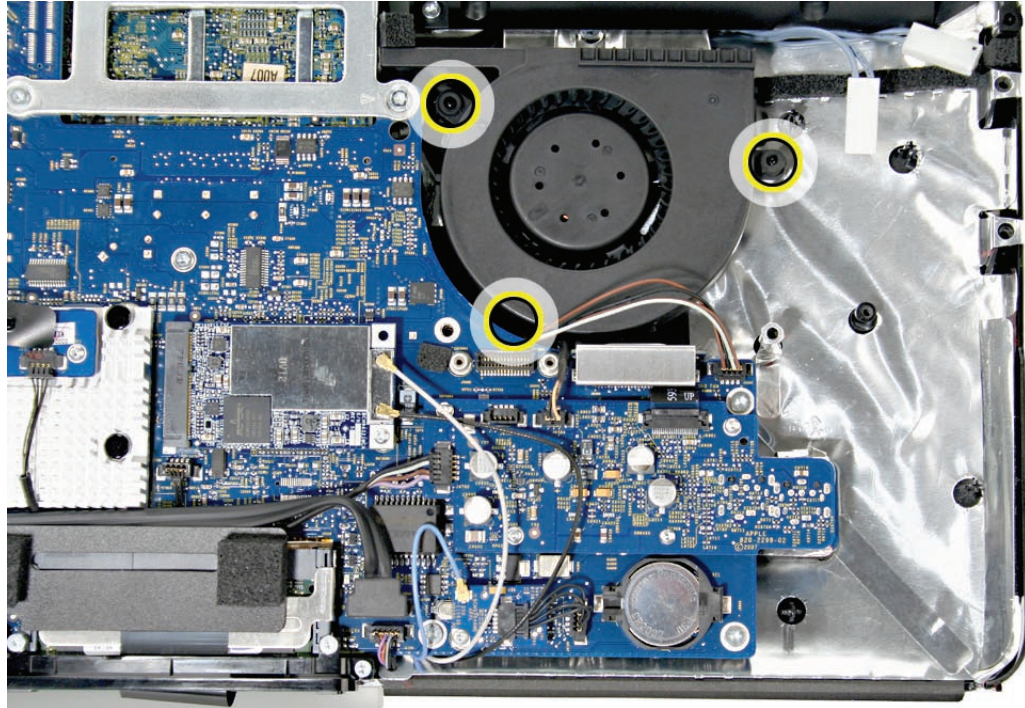
1. With a black stick, pry off the metal clip covering the optical cable connector.



2. Disconnect the optical flex cable connector from the audio board.
3. Disconnect the fan cable from the logic board (to the right of the optical cable connector).

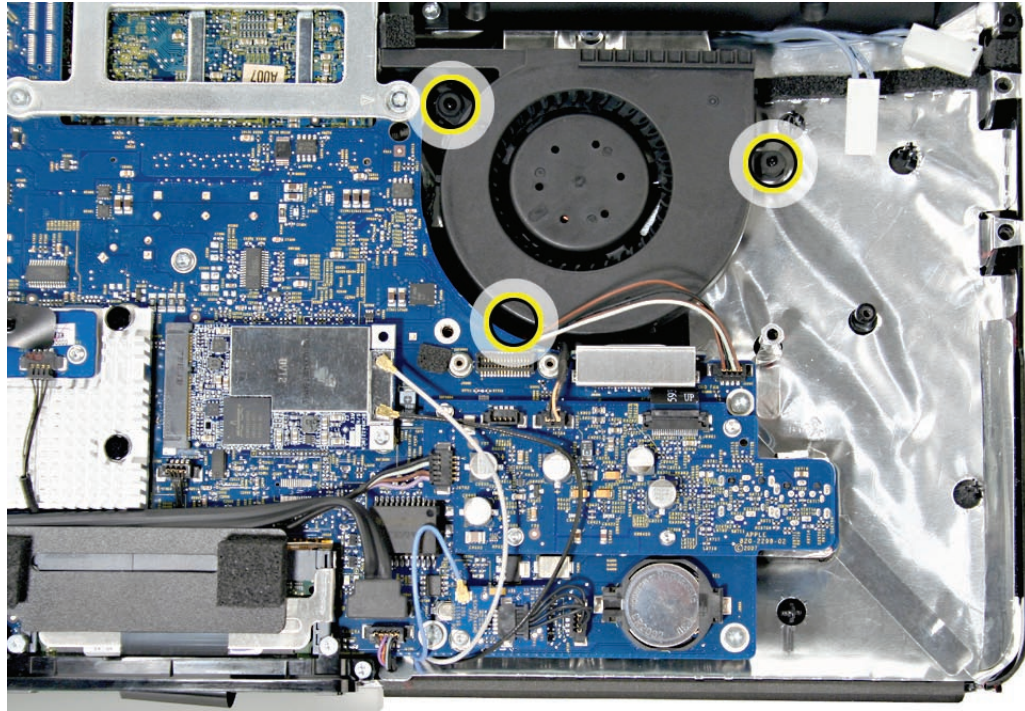


-
4. Lift the fan off the guide posts on the rear housing.

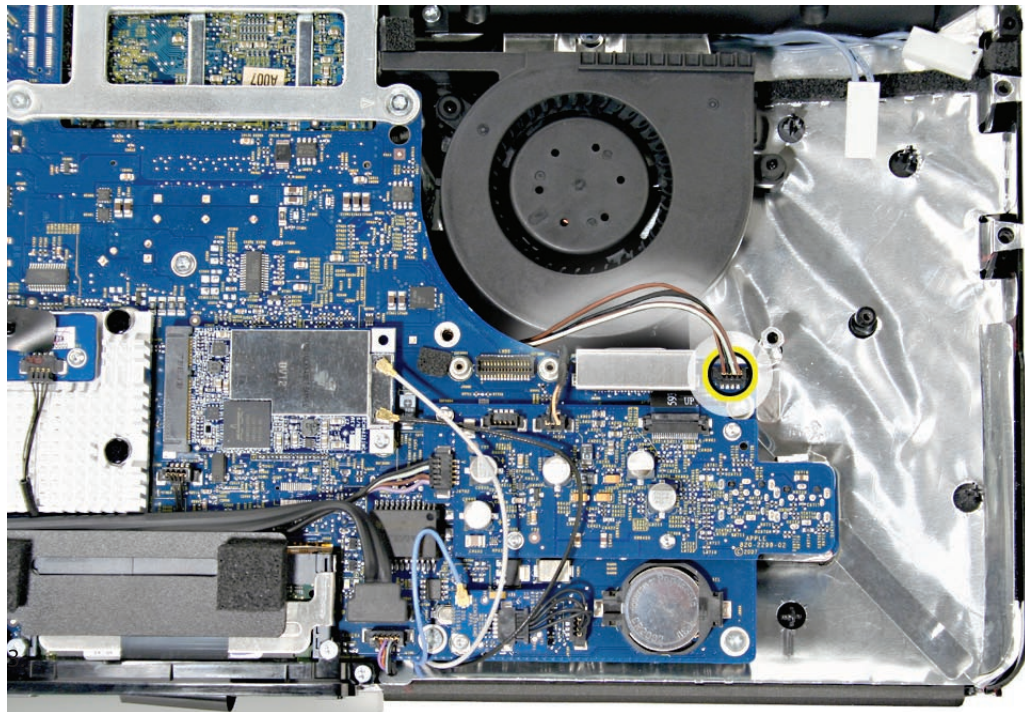


Replacing the Optical Drive Fan

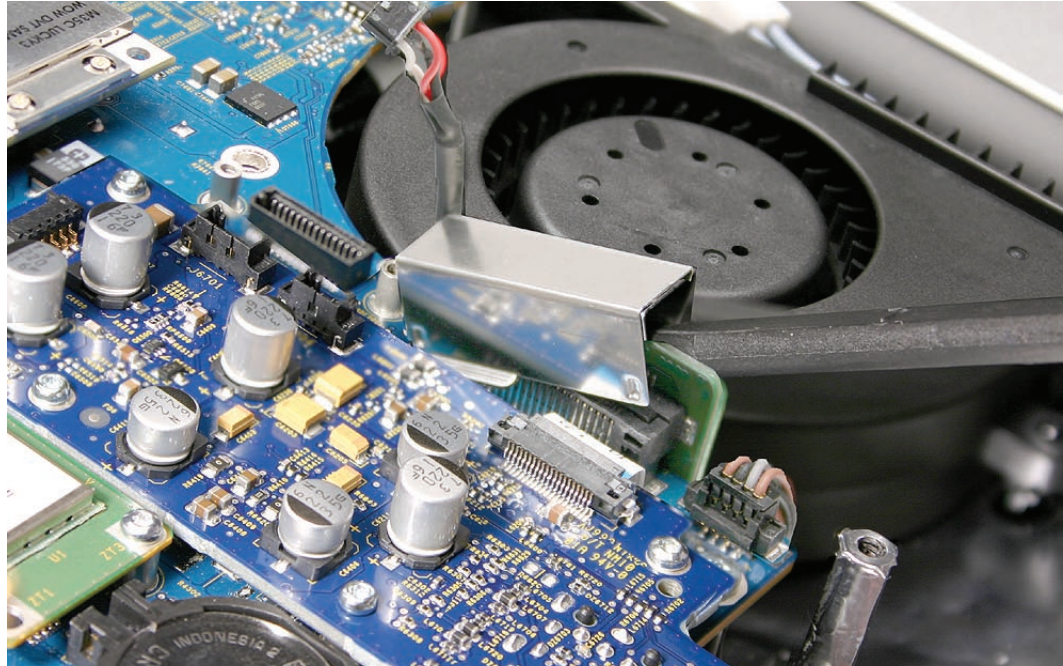
1. Lower the fan onto the guide posts in the rear cover.



2. Connect the fan cable to the logic board.



-
4. Connect the optical drive cable connector to the audio board and replace the metal cable clip over the cable connector. Make sure the straight side of the clip is facing the audio board.
 5. Replace the right speaker if it was removed.



6. [Replace the display panel.](#)
7. [Replace the front bezel.](#)
8. [Clean and replace the glass panel.](#) **Note:** This step is very important. Follow the procedures to ensure the glass is clean and free of particles.
9. [Replace the access door.](#)



CPU Fan

Tools

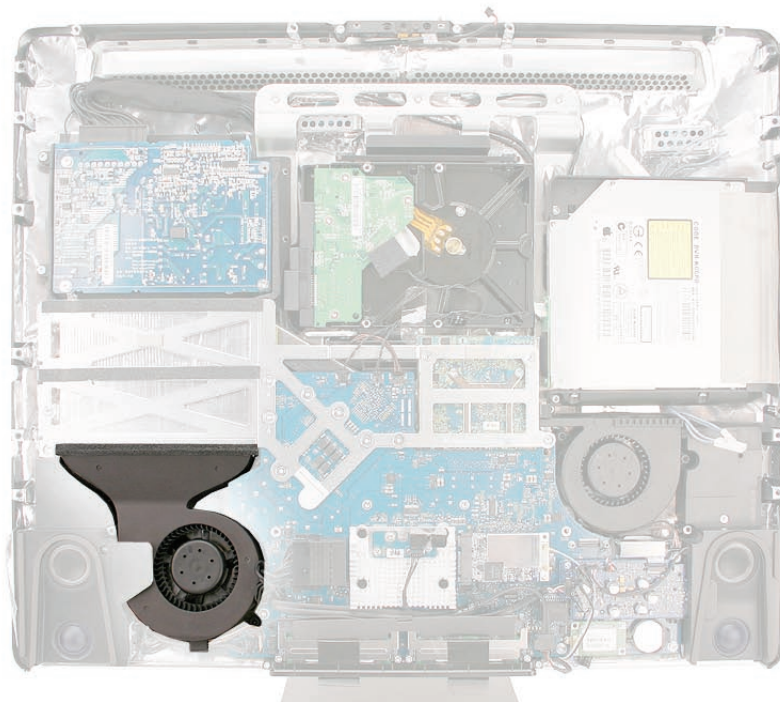
- No tools are required to remove the cpu fan.

Preliminary Steps

Before you begin, remove the following:

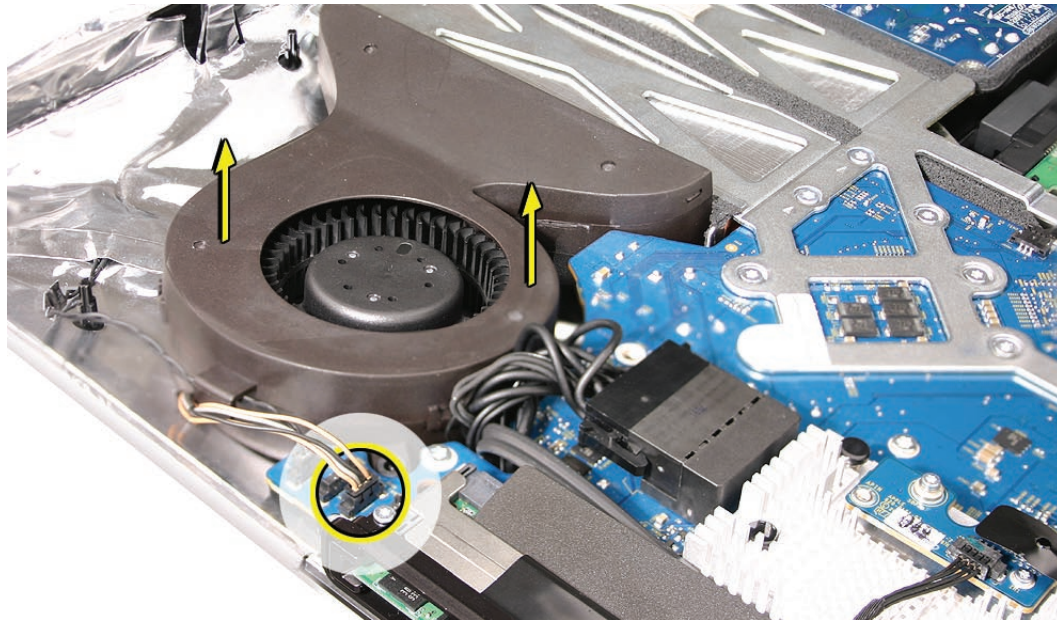
- [Access door](#)
- [Glass panel](#)
- [Front bezel](#)
- [LCD display panel](#)
- [Left speaker](#)

Part Location



Removing the CPU Fan

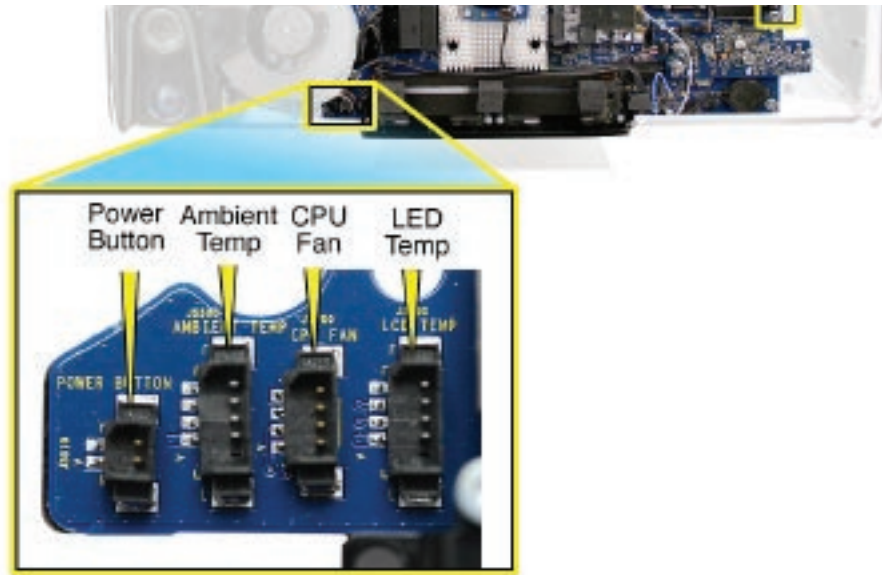
1. Disconnect the CPU fan cable from the lower left corner of the logic board.



2. Lift the fan off the guide posts on the rear housing.

Replacing the CPU Fan

1. Lower the fan onto the guide posts in the rear housing. Push it down snug onto the posts.
2. Connect the CPU fan cable to the third connector from the left, in the lower left corner of the logic board.



3. [Replace the left speaker.](#)
4. [Replace the display panel.](#)
5. [Replace the front bezel.](#)
6. [Clean and replace the glass panel.](#) **Note:** This step is very important. Follow the procedures to ensure the glass is clean and free of particles.
7. [Replace the access door.](#)



Power Supply, AC/DC

Tools

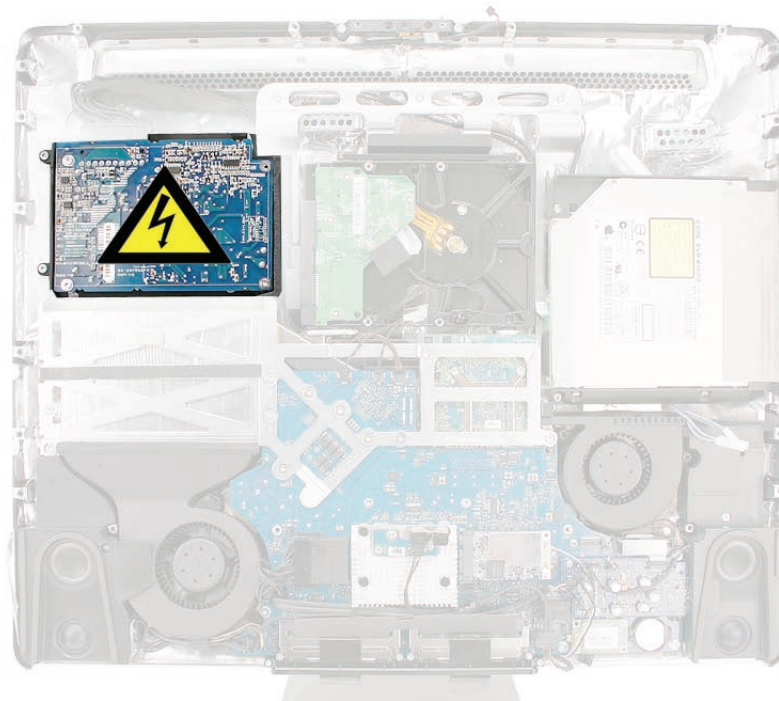
- Torx T10 screwdriver

Preliminary Steps

Before you begin, remove the following:

- [Access door](#)
- [Glass Panel](#)
- [Front bezel](#)
- [LCD display panel](#)

Part Location

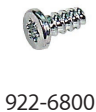


Removing the AC/DC Power Supply

WARNING: HIGH VOLTAGE: The AC/DC power supply PCB remains powered up whenever the system is plugged in, whether or not the system has been turned on. Use extreme caution when troubleshooting the system with the front bezel removed.



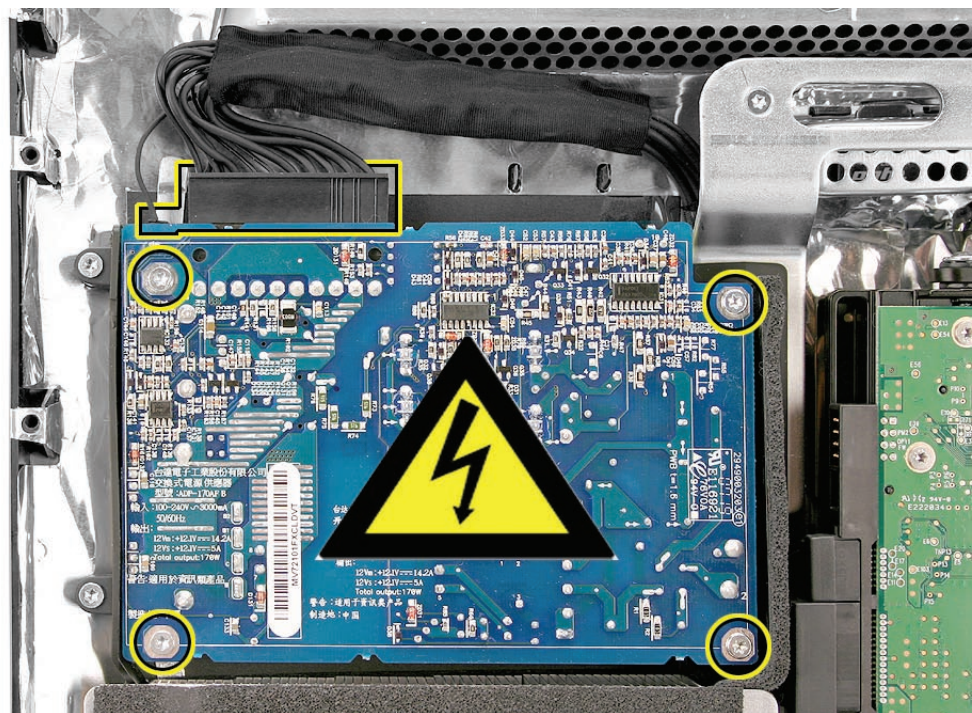
- Don't work alone. In the event of an electrical shock it is important to have another individual present who can provide assistance.
 - Keep one hand in your pocket when working on any iMac system that is plugged in. This will help ensure that your body does not provide a path to ground in the event that you accidentally make contact with the line voltage.
 - Don't wear jewelry, watches, necklaces, or other metallic articles that could present a risk if they accidentally make contact with the power supply circuitry.
1. Use extreme caution when working around the power supply. The power supply contains a high voltage capacitor that may remain charged for several minutes even when the computer is unplugged. Never touch the leads on the top side of the power supply, especially the capacitor leads located near the warning sign.
Note: If the computer is shut down by pulling the power cord, allow the power supply a good 2-3 minutes to discharge the capacitors before handling it. However, if you select "Shut Down" via the Apple menu, the computer will discharge the power supply capacitor almost immediately.
 2. Using a Torx T10 screwdriver, remove the four screws from the AC-DC power supply board.
Replacement Note: Install the machine screws on the right side and the self tapping screws on the left side.



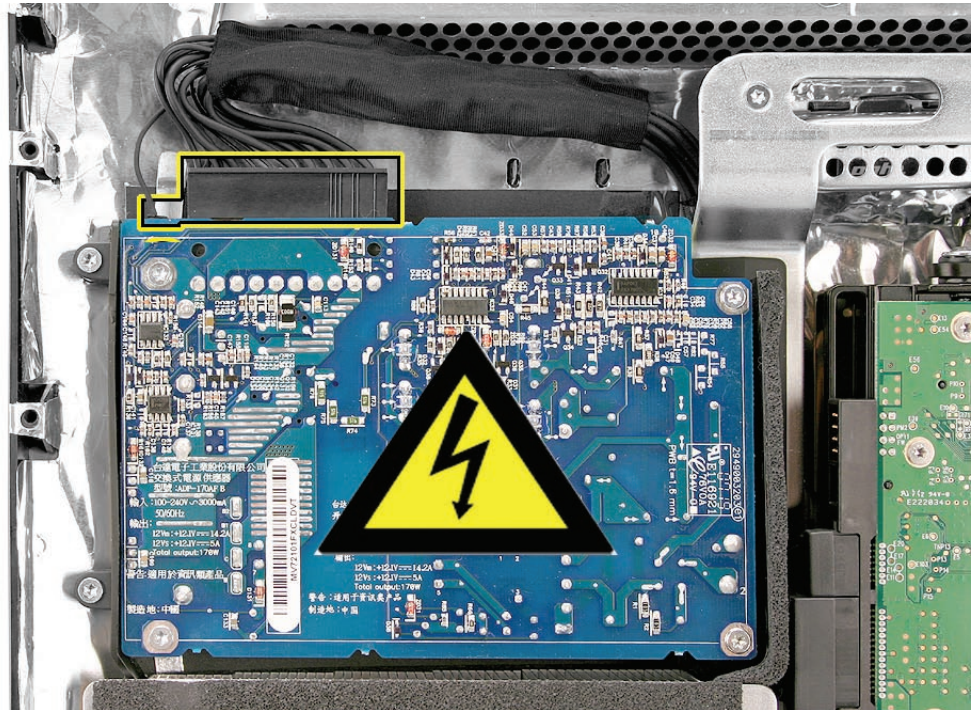
922-6800



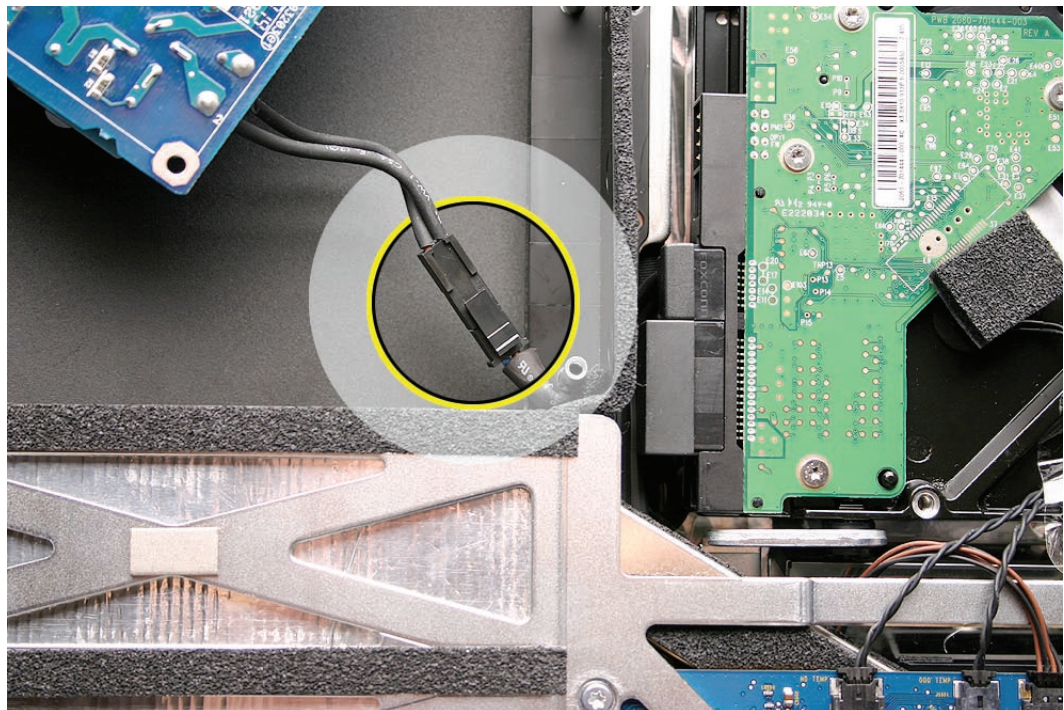
922-6842



3. After removing the screws, lift the power supply up a bit and disconnect the DC power supply cable and the small two-pin ground connector in the top left corner.



4. Disconnect the AC power inlet cable tucked neatly between the right pressure wall (black plastic piece along the right side of the power supply).



5. Lift the power supply from the rear housing.

Replacing the AC/DC Power Supply



WARNING: The AC/DC power supply PCB remains powered up whenever the system is plugged in, whether or not the system has been turned on. Use extreme caution when troubleshooting the system with the front bezel removed.

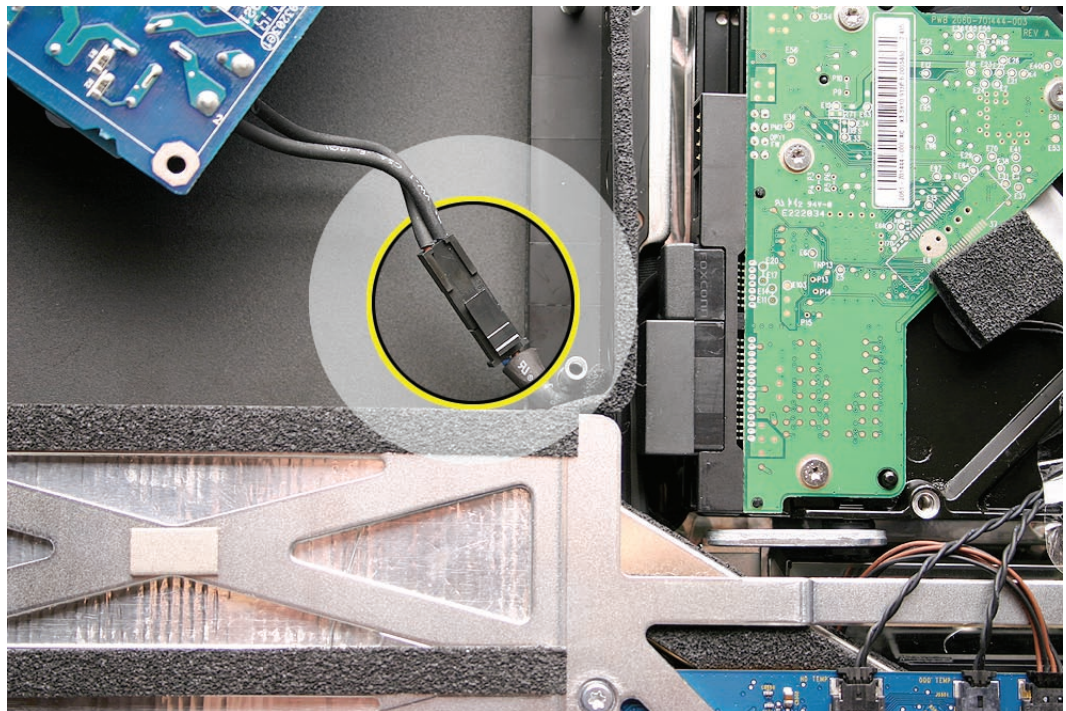
- Don't work alone. In the event of an electrical shock it is important to have another individual present who can provide assistance.
 - Keep one hand in your pocket when working on any iMac system that is plugged in. This will help ensure that your body does not provide a path to ground in the event that you accidentally make contact with the line voltage.
 - Don't wear jewelry, watches, necklaces, or other metallic articles that could present a risk if they accidentally make contact with the power supply circuitry.
1. Make sure the right pressure wall is in place. If it was removed, slip the pressure wall over the two posts on the chassis and replace the two machine screws.



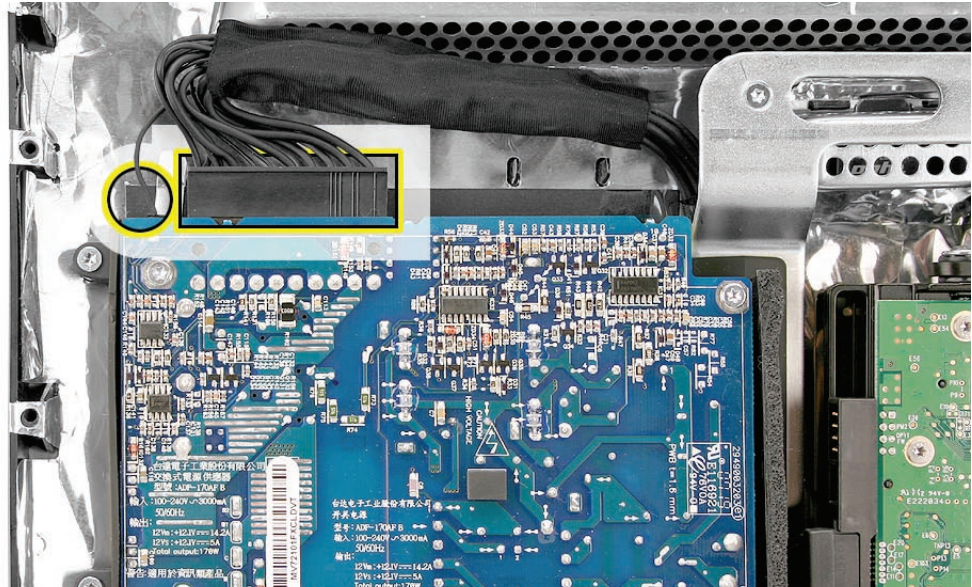
2. Route the AC inlet cable under the pressure wall as shown.



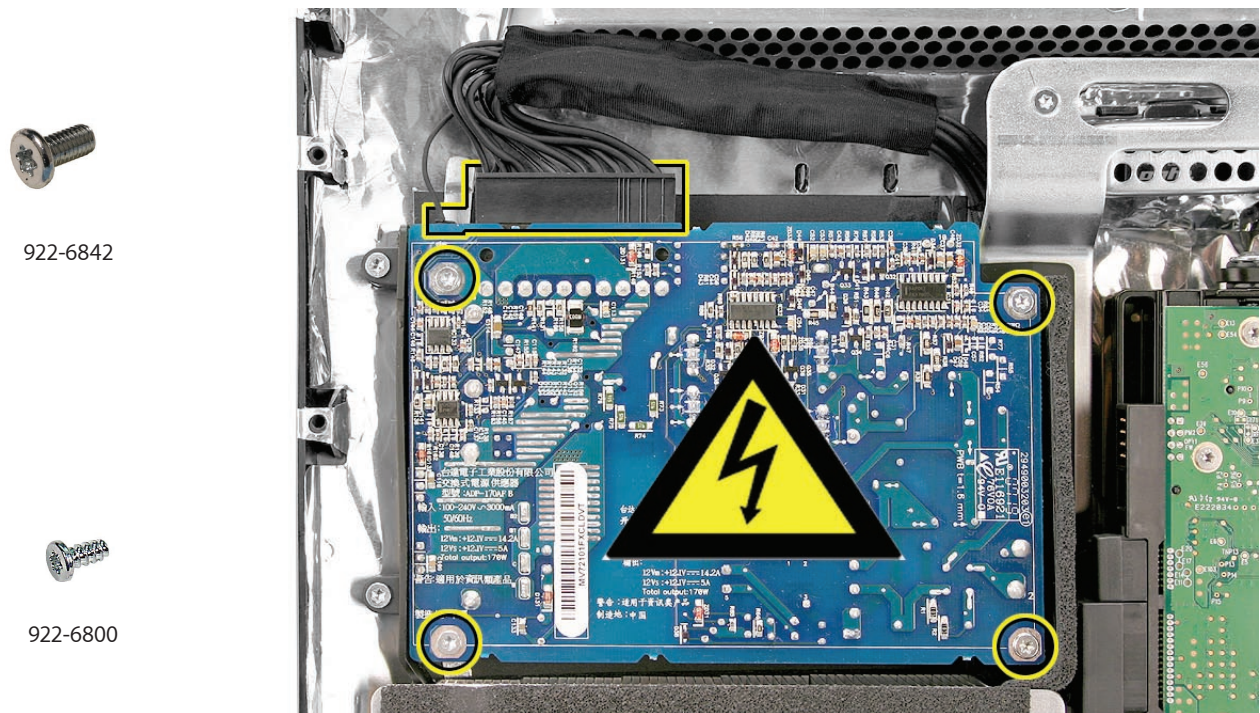
3. Connect the AC inlet cable to the power supply and tuck the connector under the bottom right corner of the power supply.



4. Connect the main DC power cable and the single-pin connector to the top left corner of the power supply.



5. Replace the four screws, attach the machine screws to the right side of the power supply.



6. [Replace the display panel.](#)
7. [Replace the front bezel.](#)

-
8. [Clean and replace the glass panel.](#) **Note:** This step is very important. Follow the procedures to ensure the glass is clean and free of particles.
 9. [Replace the access door.](#)





Hard Drive

Tools

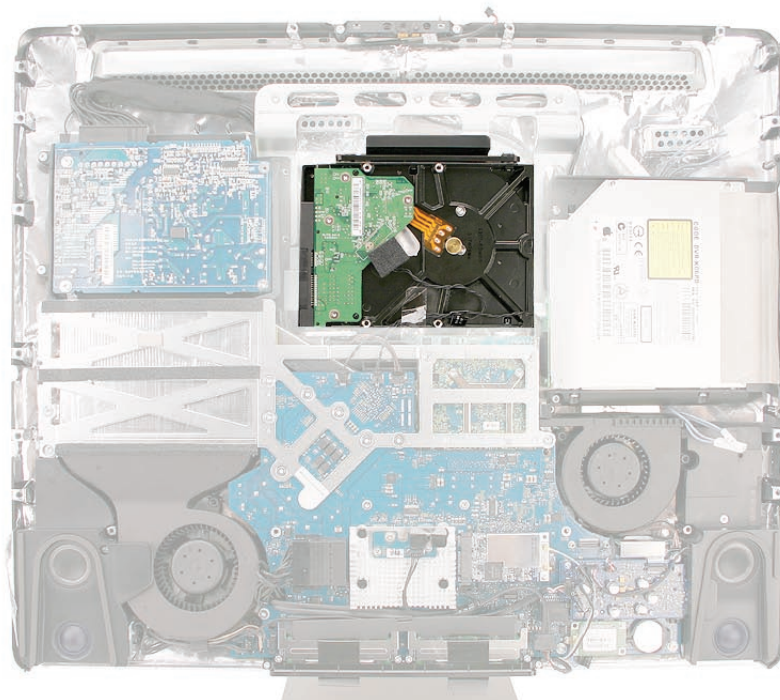
- Torx T10 screwdriver
- Torx T8 screwdriver (if removing clip from hard drive)

Preliminary Steps

Before you begin, remove the following:

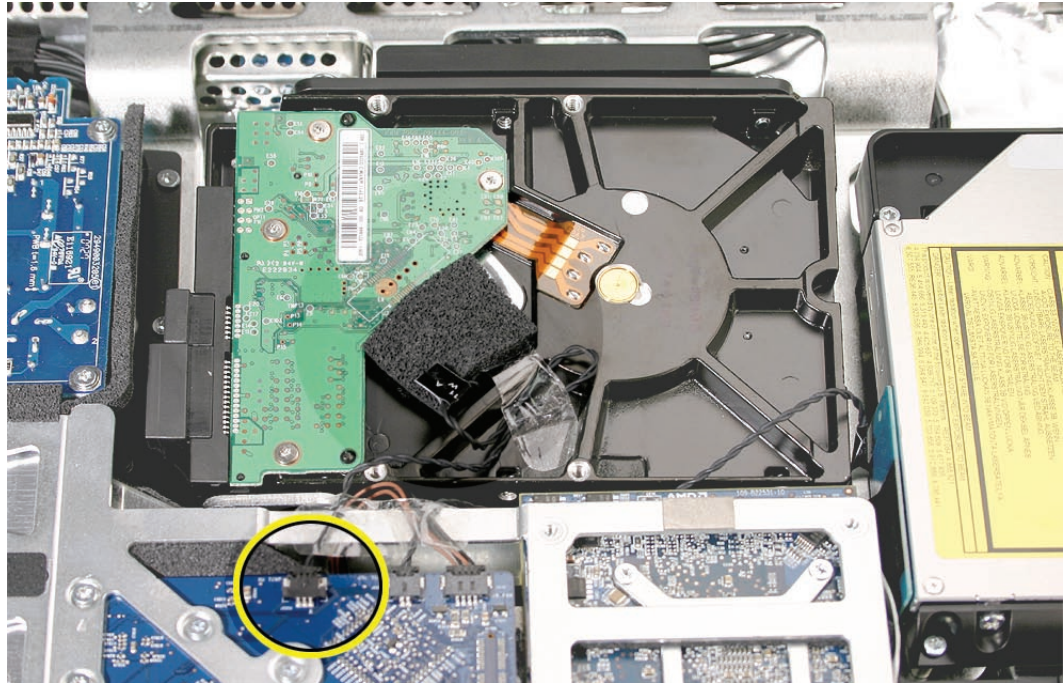
- [Access door](#)
- [Glass Panel](#)
- [Front bezel](#)
- [LCD display panel](#)

Part Location

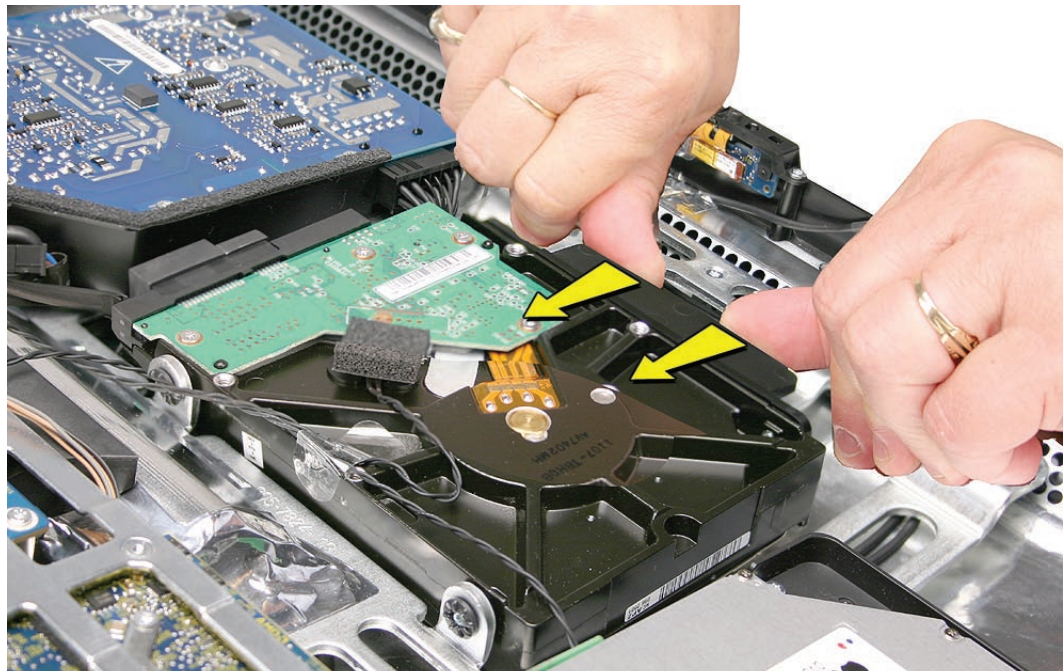


Removing the Hard Drive

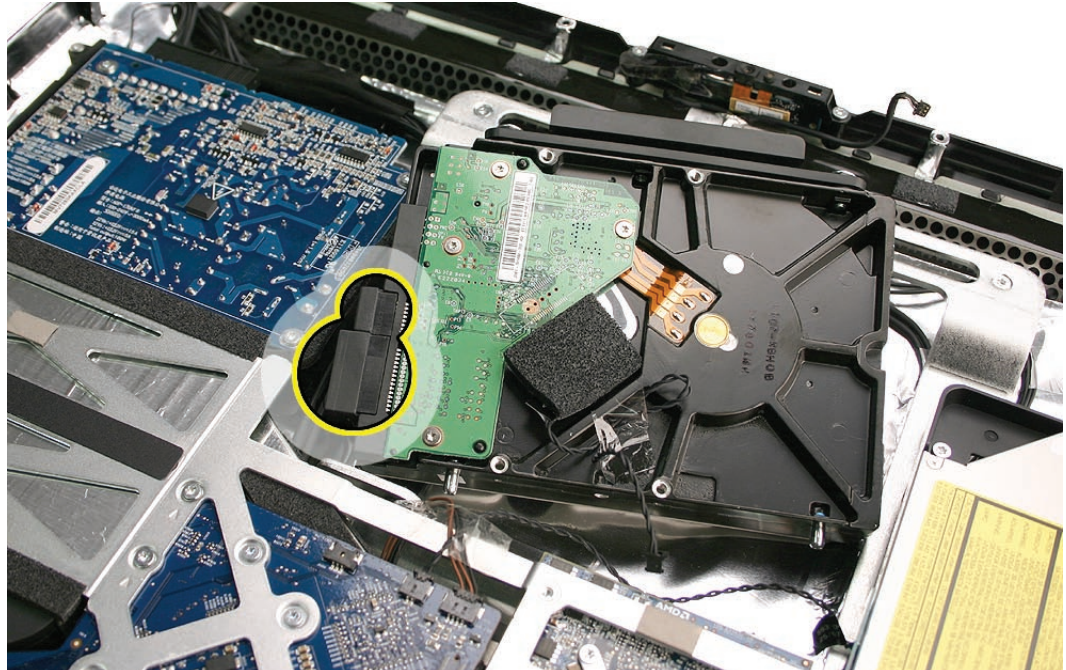
1. Disconnect the hard drive temperature sensor cable from the top of the logic board.



2. Push HARD on the black plastic clip and in the direction of the logic board to release the hard drive clip from the chassis. Once the clip is released, pull the hard drive toward the top of the chassis to release the hard drive pins from the rubber grommets on the chassis.



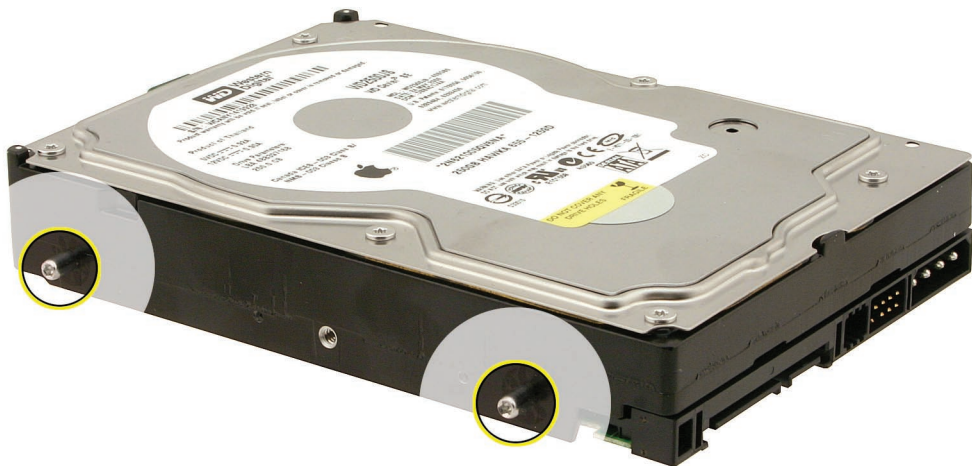
3. Disconnect the power and data cables from the power supply end of the hard drive.



4. Lift the hard drive assembly from the computer assembly.
5. If you are replacing the hard drive continue with the procedure. Remove the temperature sensor cable, screws, and screw pins. Transfer them to the replacement drive, and place the new foam gasket, included with the replacement drive, on top of the sensor.
6. At the lower side of the drive, remove the two screw pins.



922-7001



- At the upper side of the drive, remove the two screws and the plastic clip.

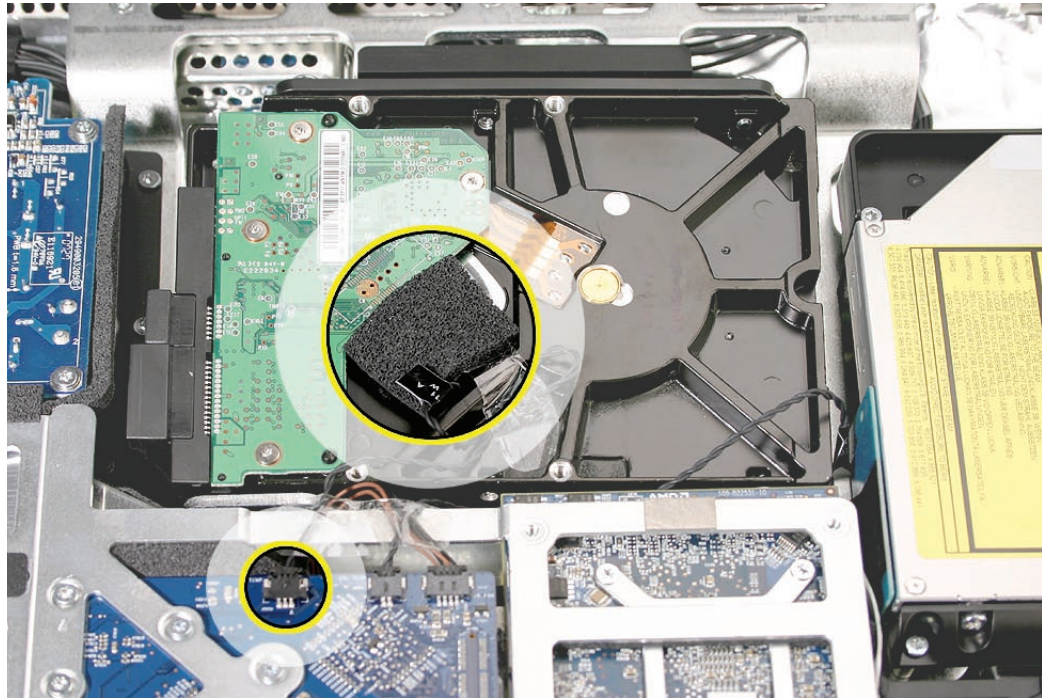


922-7019

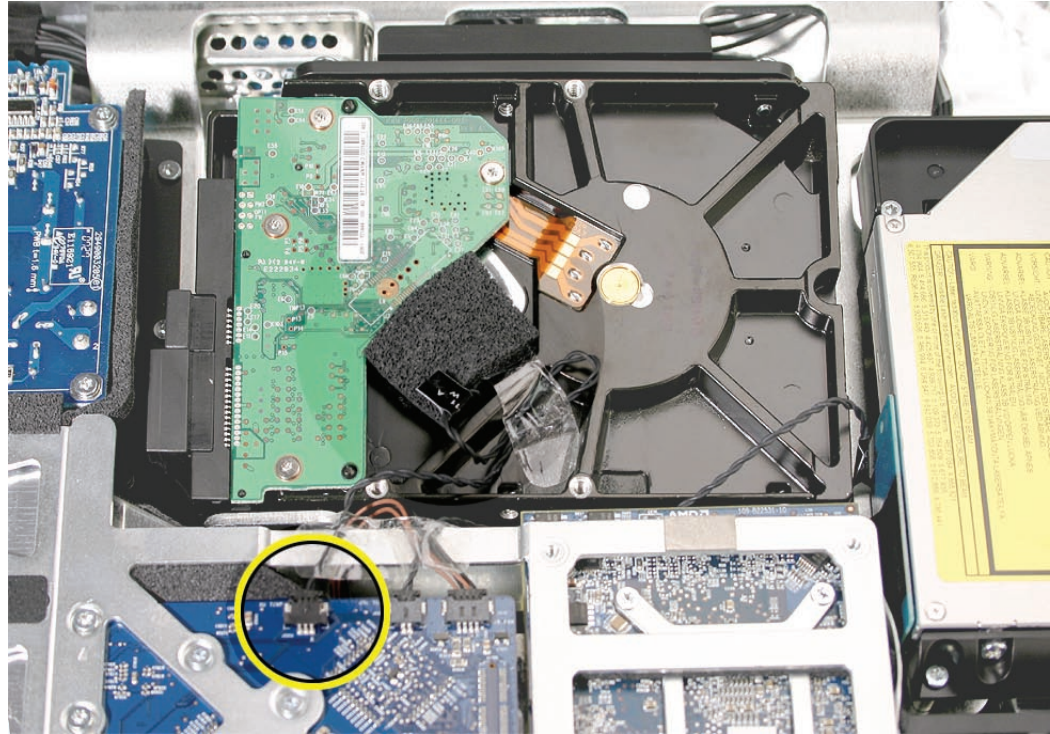


Replacing the Hard Drive

1. If you are installing a new hard drive, transfer the screws, screw pins and temperature sensor cable to the replacement drive. Place the new foam gasket, included with the replacement drive, on top of the sensor.
2. Orient the hard drive with the circuit board side of the hard drive facing up (as shown).
3. Connect the hard drive data and power cables to the hard drive.
4. Line up the two pins on the side of the hard drive with the two rubber grommets/openings in the chassis.
5. Press the hard drive the rest of the way into the rear housing. You will hear a snap when the black plastic clip at the top hard drive clicks into place on the chassis.
6. If the sensor cable was disconnected from the top of the hard drive, peel off the foam gasket, slide the sensor-end of the cable into the sensor holder, and cover the sensor with a new foam gasket included with the replacement hard drive.



7. Connect the other end of the temperature sensor cable to the logic board.



8. [Replace the display panel.](#)
9. [Replace the front bezel.](#)
10. [Clean and replace the glass panel.](#) **Note:** This step is very important. Follow the procedures to ensure the glass is clean and free of particles.
11. [Replace the access door.](#)



Hard Drive Sensor Cable

Tools

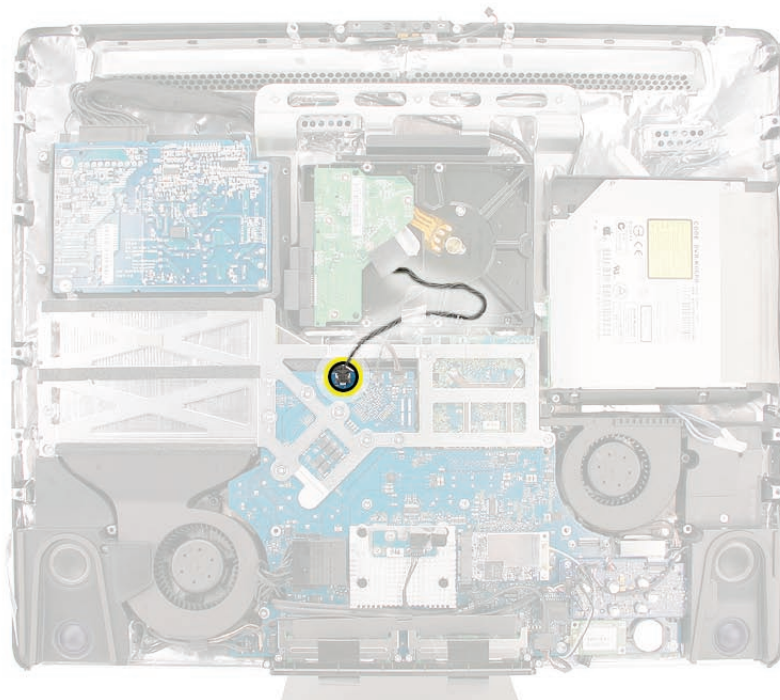
No tools are required for this procedure.

Preliminary Steps

Before you begin, remove the following:

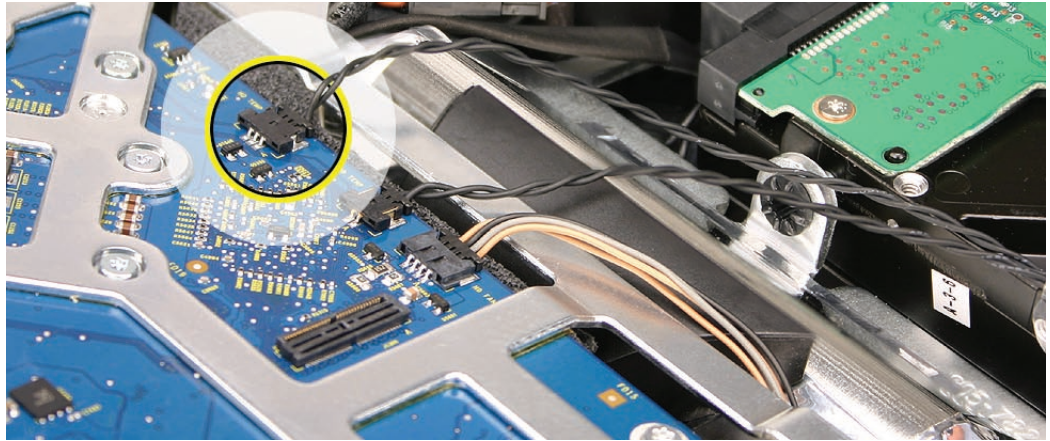
- [Access door](#)
- [Glass Panel](#)
- [Front bezel](#)
- [LCD display panel](#)

Part Location

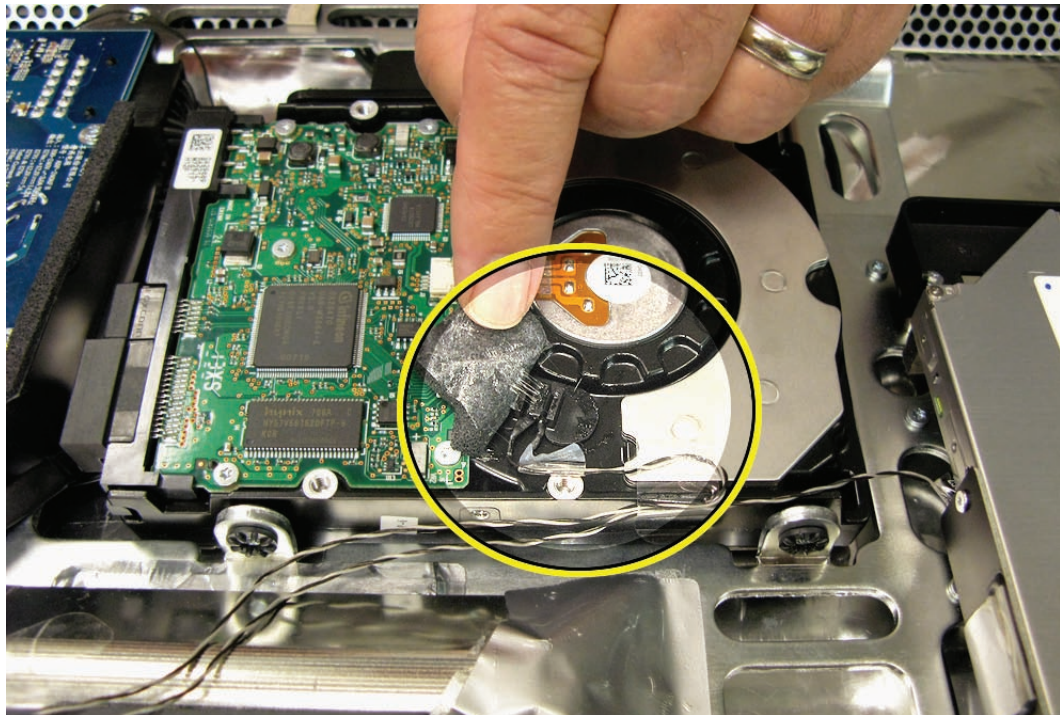


Removing the Hard Drive Sensor Cable

1. Disconnect the temperature sensor cable from its connector on the top of the logic board.

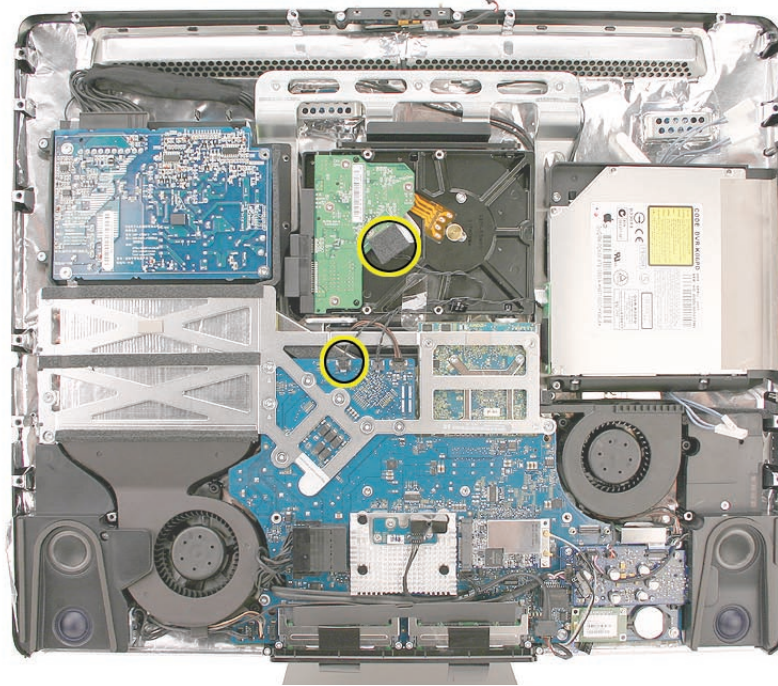


2. Remove the sensor-end of the cable from the sensor clip located under the foam gasket on top of the hard drive



Replacing the Hard Drive Sensor Cable

1. Connect the sensor cable to the clip on the hard drive and to the connector on the logic board. Place the foam gasket over the sensor clip.



2. [Replace the display panel.](#)
3. [Replace the front bezel.](#)
4. [Clean and replace the glass panel.](#) **Note:** This step is very important. Follow the procedures to ensure the glass is clean and free of particles.
5. [Replace the access door.](#)



Optical Drive

Tools

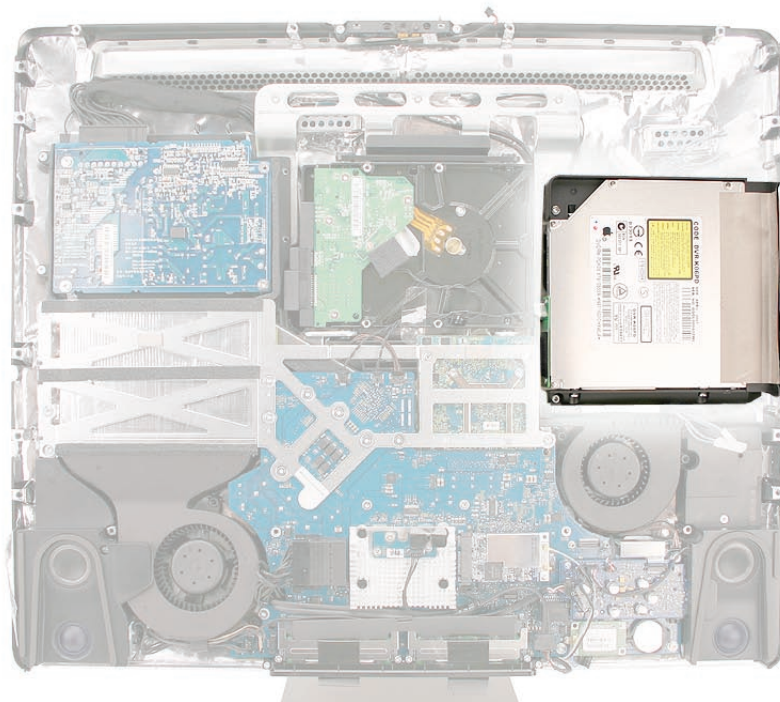
- Torx T10 screwdriver
- Torx T6 screwdriver

Preliminary Steps

Before you begin, remove the following:

- [Access door](#)
- [Glass Panel](#)
- [Front bezel](#)
- [LCD display panel](#)

Part Location



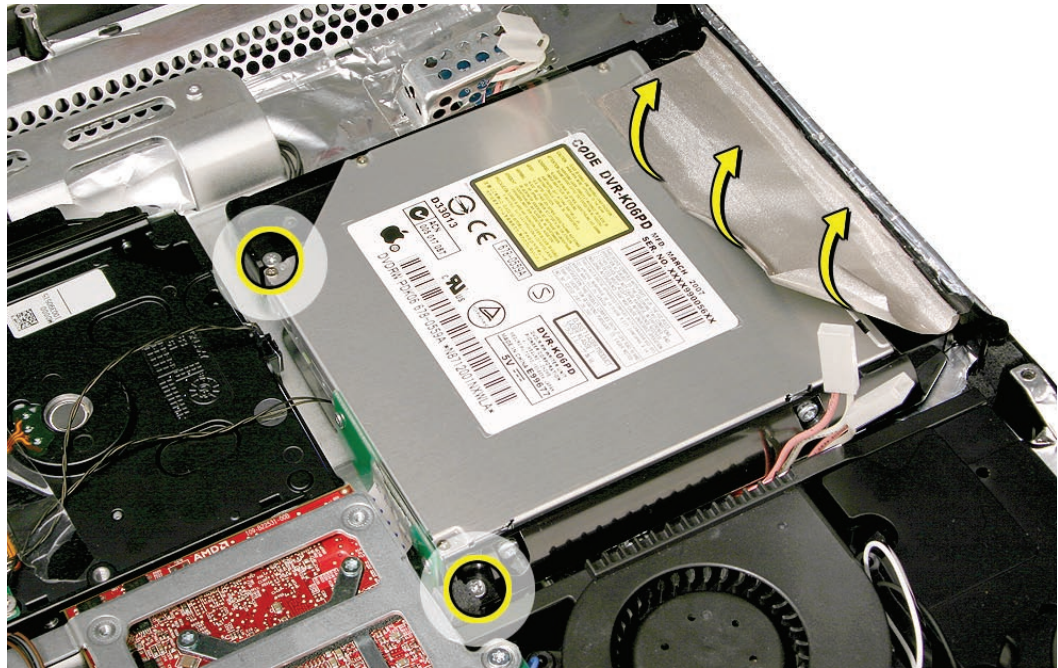
Removing the Optical Drive

Warning: When servicing the optical drive, handle it by the edges only. Pressing elsewhere on the drive could damage its internal mechanism.

1. Remove the two T10 screws.
2. Carefully peel back the strip of EMI mesh tape that anchors the bezel end of the drive to the rear cover.



922-7018



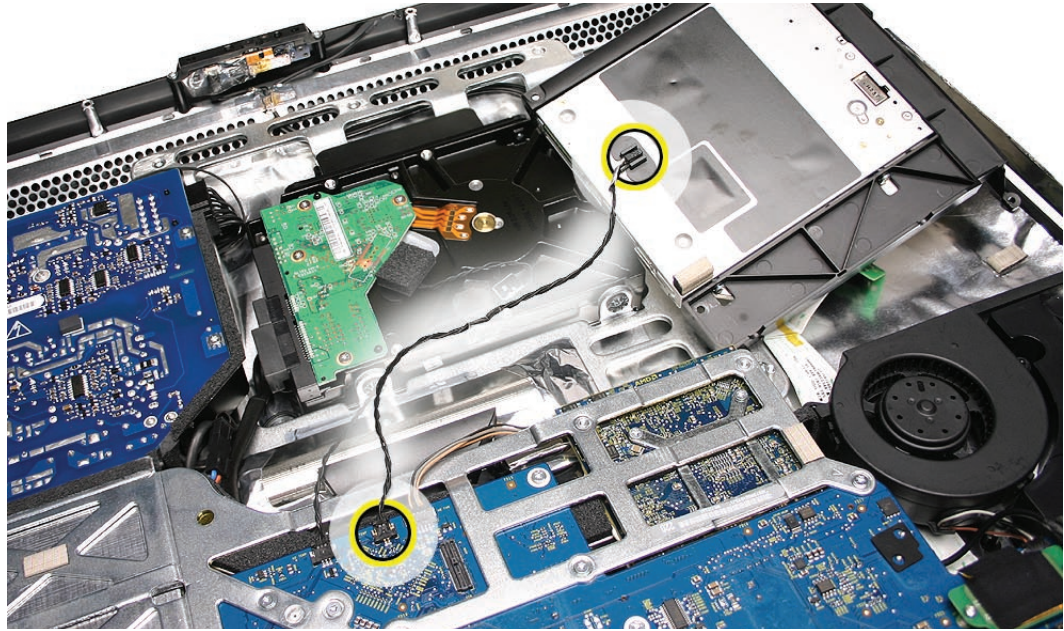
3. Tilt up the optical drive, remove the two T6 screws on the flex cable board. Remove the flex cable board from the end of the optical drive.



922-7656



-
4. Disconnect the temperature sensor cable from its connector on the top edge of the logic board. On the bottom of the optical drive, peel back the foam gasket (not shown) and disconnect the sensor from the sensor clip.

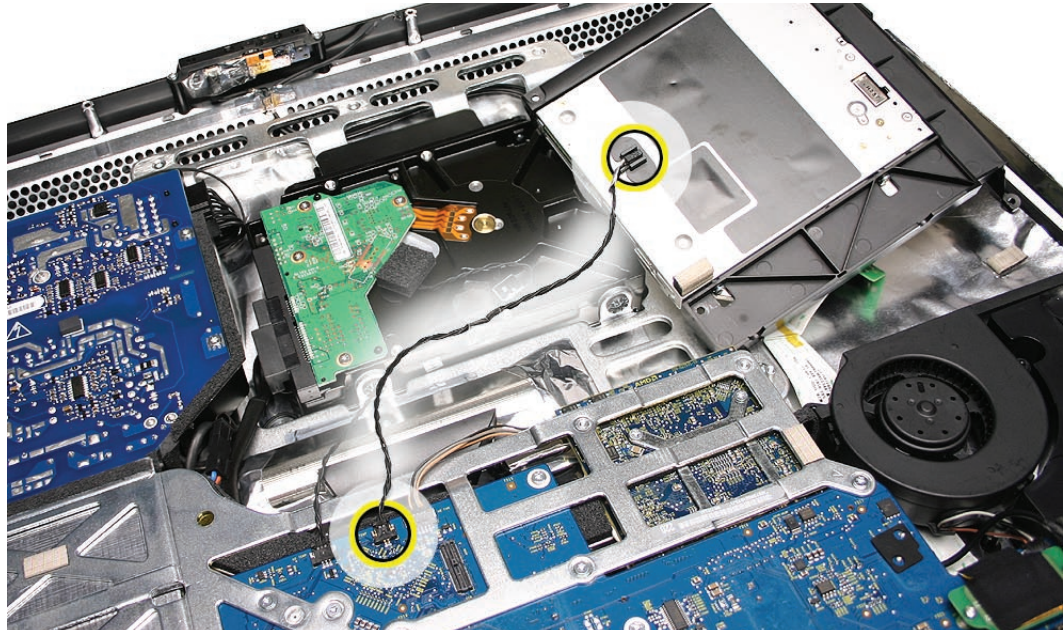


5. If you are replacing the optical drive, transfer the EMI mesh tape, the foam gasket, and the temp sensor cable to the replacement drive. The replacement drive includes the plastic mounting brackets, sensor cable clip, slot-load bezel, and the EMI gasket.

Replacing the Optical Drive

Caution: Never press down on or grasp the body of the optical drive when installing it. Pressing or squeezing the body of the optical drive could damage the drive mechanism.

1. Connect the optical sensor cable to the underside of the drive. Place a new foam gasket on top of the sensor clip. **Note:** Replace the foam gasket when installing a replacement optical drive. A new foam gasket is included with replacement optical and hard drives.



2. Install the flex cable onto the optical drive with two T6 screws.



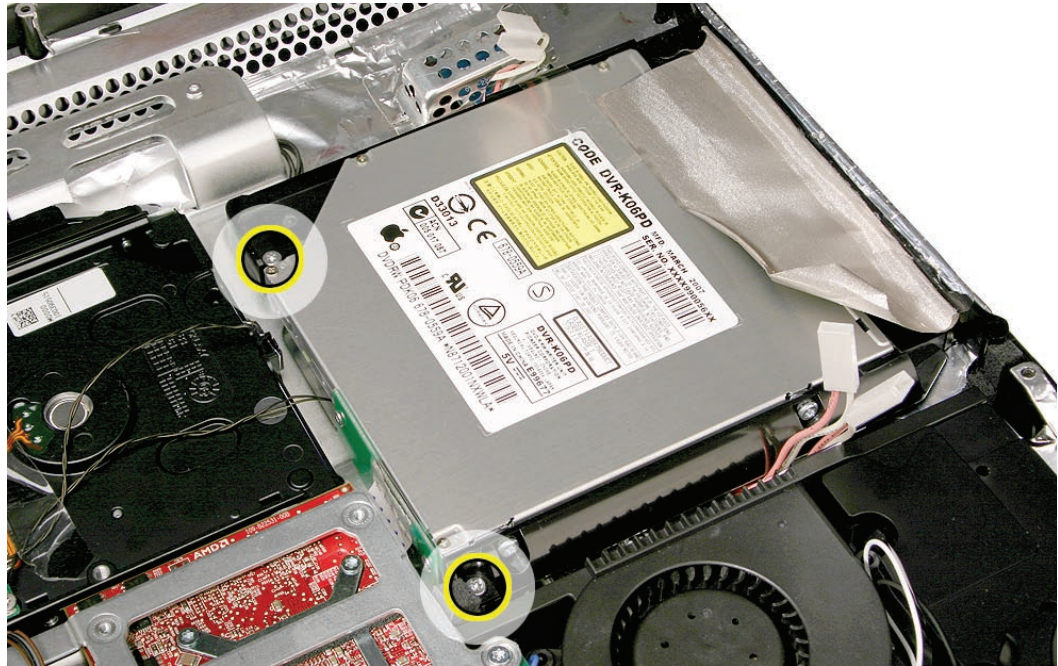
922-7656



3. Insert the optical drive bezel into the rear housing, lining up the bezel with the slot opening.
4. Replace the two T10 optical drive screws.



922-7018



5. Replace the EMI mesh tape on top of the optical drive. **Important:** Make sure the EMI mesh tape does not cover any of the slot-load opening on the rear cover as you replace the optical drive into the computer assembly.
6. [Replace the display panel.](#) **Important:** Tuck the four inverter cables into the open cavities in the rear housing. If the cables are not tucked into the open areas next to the optical drive, the LCD panel will not lower into place correctly making proper installation of the front bezel difficult.
7. After replacing the optical drive, plug in the computer and test the optical drive by inserting and ejecting DVD-R media. Repeat the insert/eject test three times.
8. [Replace the front bezel.](#)
9. [Clean and replace the glass panel.](#) **Note:** This step is very important. Follow the procedures to ensure the glass is clean and free of particles.
10. [Replace the access door.](#)



Optical Drive Flex Cable

Tools

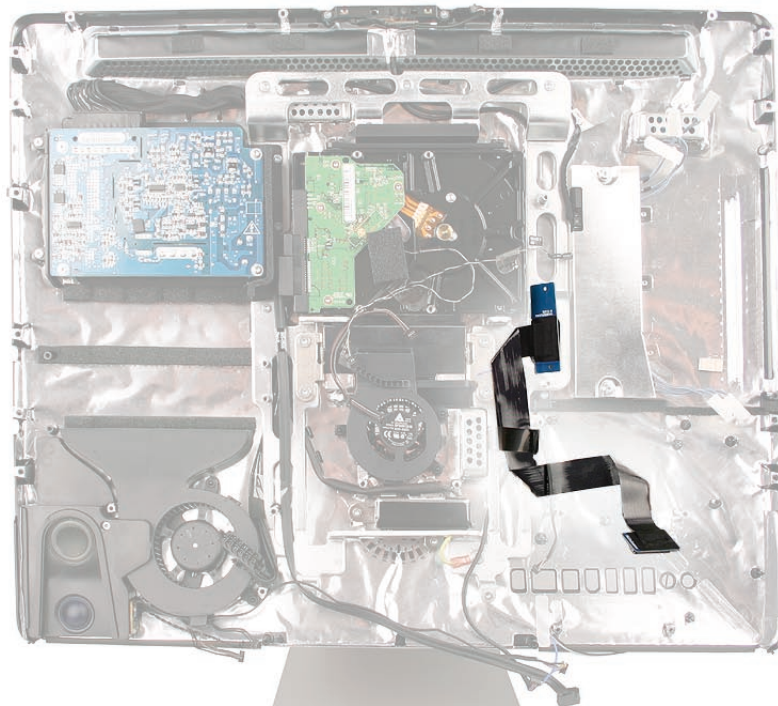
- A black stick

Preliminary Steps

Before you begin, remove the following:

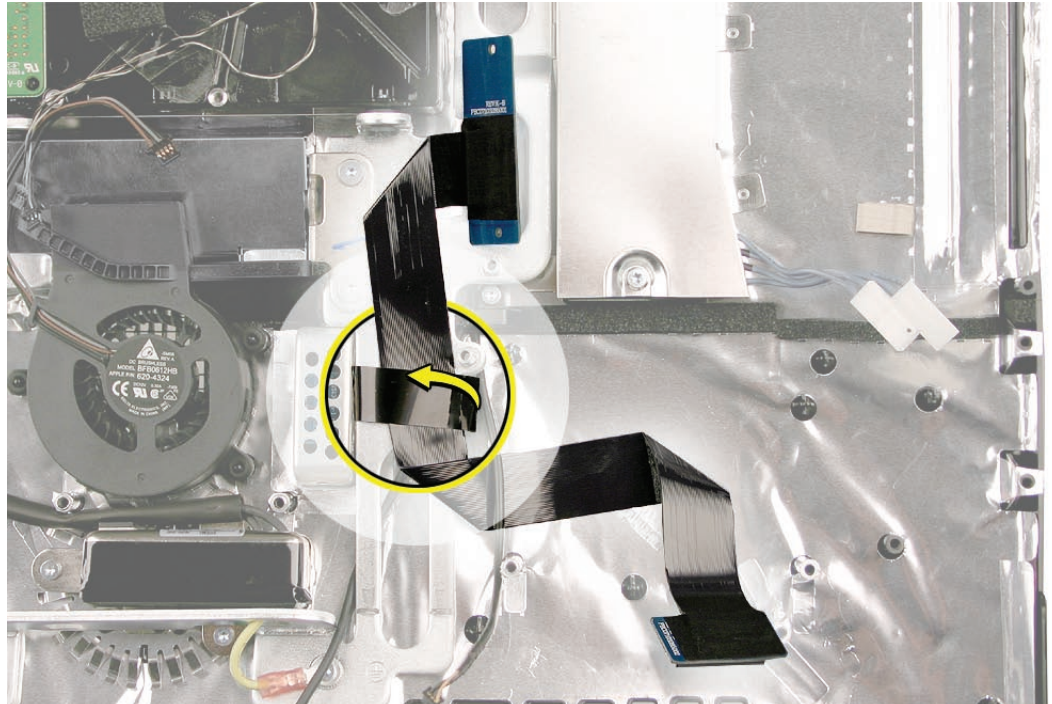
- [Access door](#)
- [Glass Panel](#)
- [Front bezel](#)
- [LCD display panel](#)
- [Optical drive](#)
- [Logic board](#)
- [Optical Fan](#)

Part Location



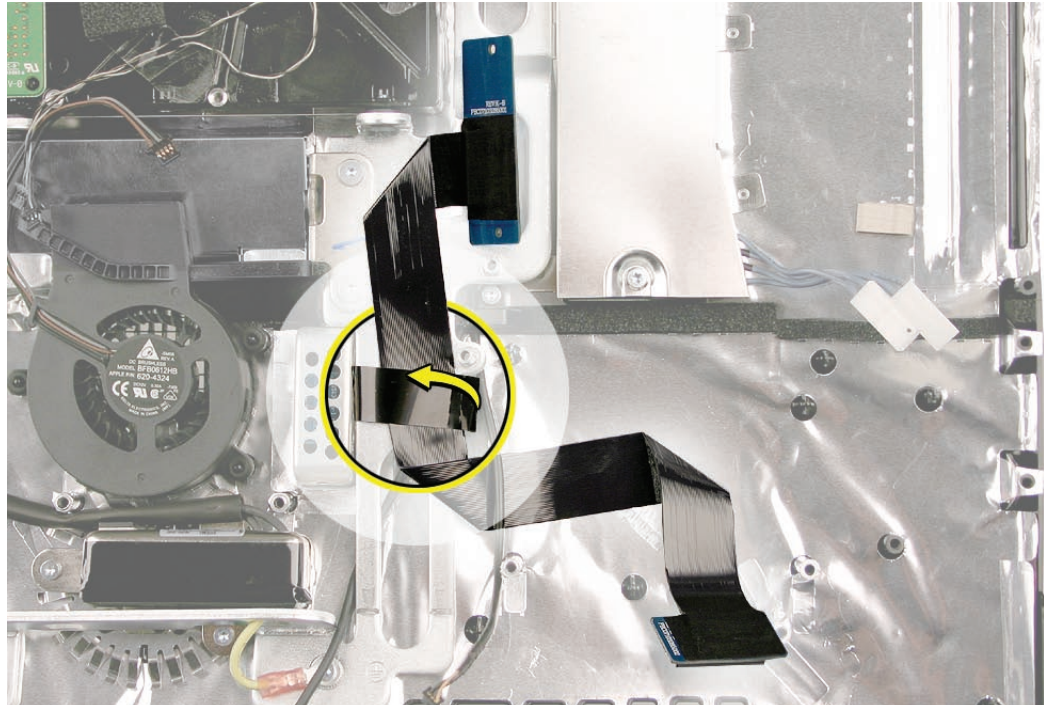
Removing the Optical Flex Cable

1. Release the black tape holding the cable to the chassis. Lift the cable out of the chassis.



Replacing the Optical Flex Cable

1. Position the cable into the rear housing as shown above.
2. Fasten the flexible cable to the chassis with a piece of kapton tape if the black tape doesn't stick.



3. [Replace the optical fan.](#)
4. [Replace the logic board.](#)
5. [Replace the optical drive.](#)
6. [Replace the display panel.](#)
7. [Replace the front bezel.](#)
8. [Clean and replace the glass panel.](#) **Note:** This step is very important. Follow the procedures to ensure the glass is clean and free of particles.
9. [Replace the access door.](#)



Optical Sensor Cable

Tools

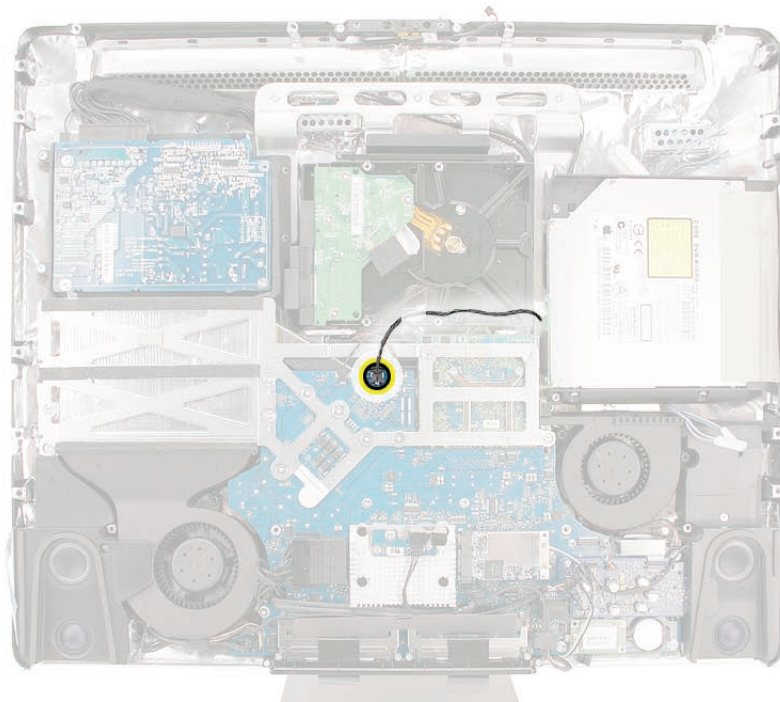
- Torx T6 screwdriver
- Torx T6 screwdriver

Preliminary Steps

Before you begin, remove the following:

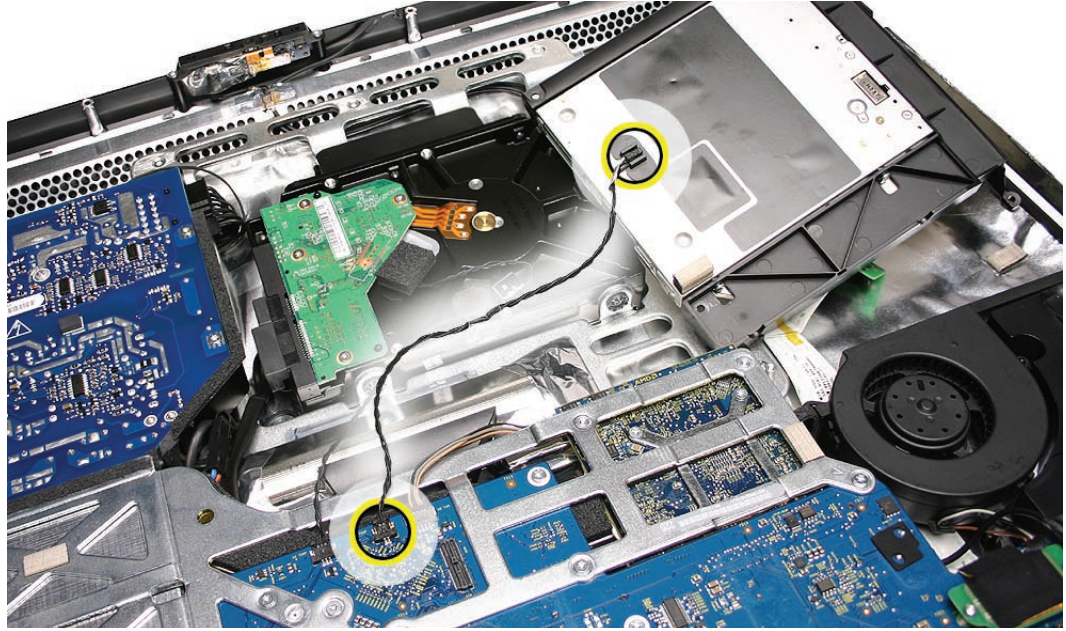
- [Access door](#)
- [Glass Panel](#)
- [Front bezel](#)
- [LCD display panel](#)
- [Optical drive](#)

Part Location



Removing the Optical Sensor Cable

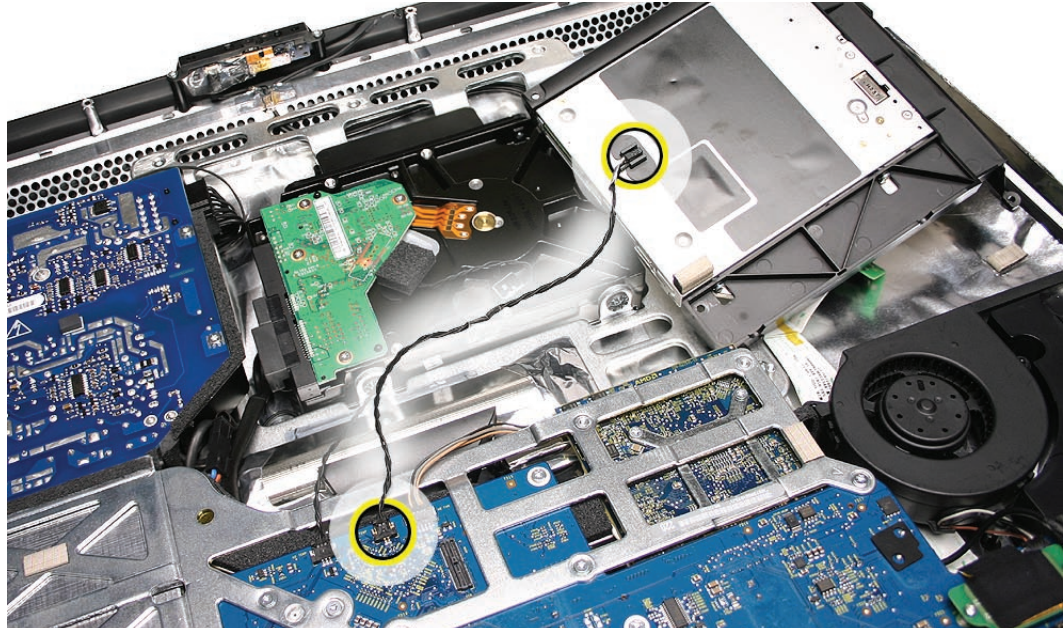
1. Disconnect the temperature sensor cable from the connector on the logic board.
2. On the bottom of the optical drive, peel back the foam gasket (not shown) covering the sensor clip and disconnect the sensor from the sensor clip. This photo shows the location on the iMac (24-inch Mid 2007). The location is the same on the iMac (20-inch Mid 2007).



Replacing the Optical Sensor Cable

Caution: Never press down on or grasp the body of the optical drive when installing it. Pressing or squeezing the body of the optical drive could damage the drive mechanism.

1. Connect the optical sensor cable to the sensor clip on the underside of the drive. Place the foam gasket on top of the sensor clip.



2. [Replace the optical drive.](#)
3. Connect the other end of the sensor cable to the connector on the logic board.
4. [Replace the display panel.](#)
5. [Replace the front bezel.](#)
6. [Clean and replace the glass panel.](#) **Note:** This step is very important. Follow the procedures to ensure the glass is clean and free of particles.
7. [Replace the access door.](#)



Logic Board

Tools

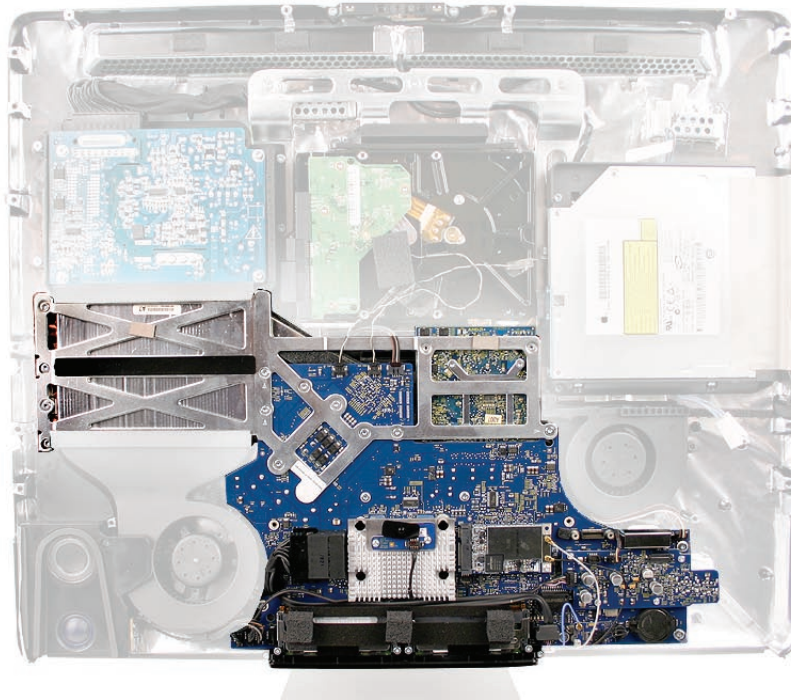
- Torx T8 screwdriver
- Torx T10 screwdriver

Preliminary Steps

Before you begin, remove the following:

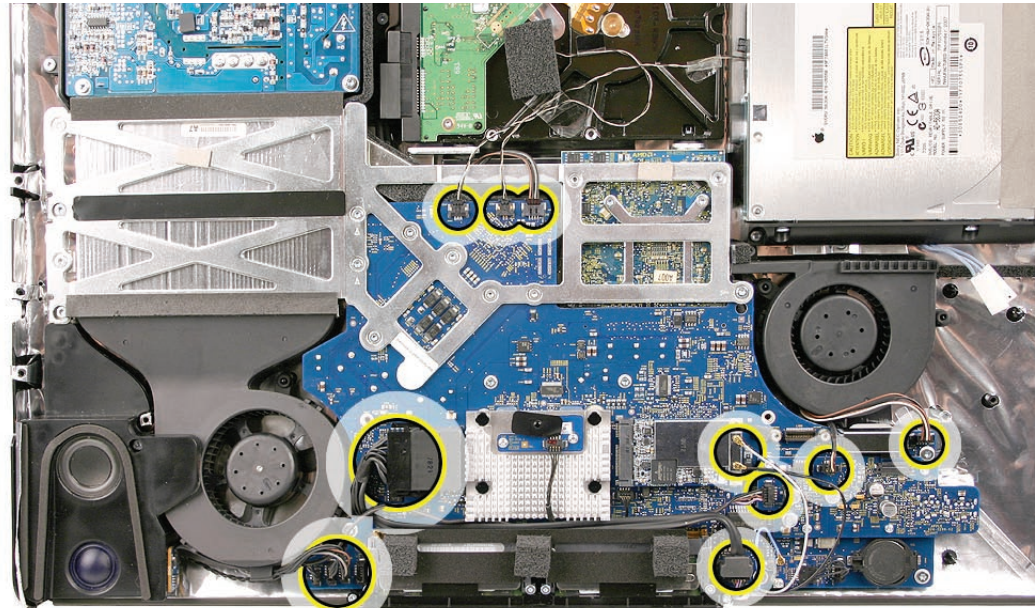
- [Access door](#)
- [Glass panel](#)
- [Front bezel](#)
- [LCD display panel](#)
- [Speaker, right](#)

Part Location



Removing the Logic Board

1. Disconnect the highlighted connectors from the logic board. **Note:** The IR and Bluetooth cables do not have to be disconnected to remove the logic board.



2. Remove the ten T10 screws and the two T8 screws from the logic board. Note that the machine screw locations have an arrow designation stamped onto the metal backer plate.



922-8173



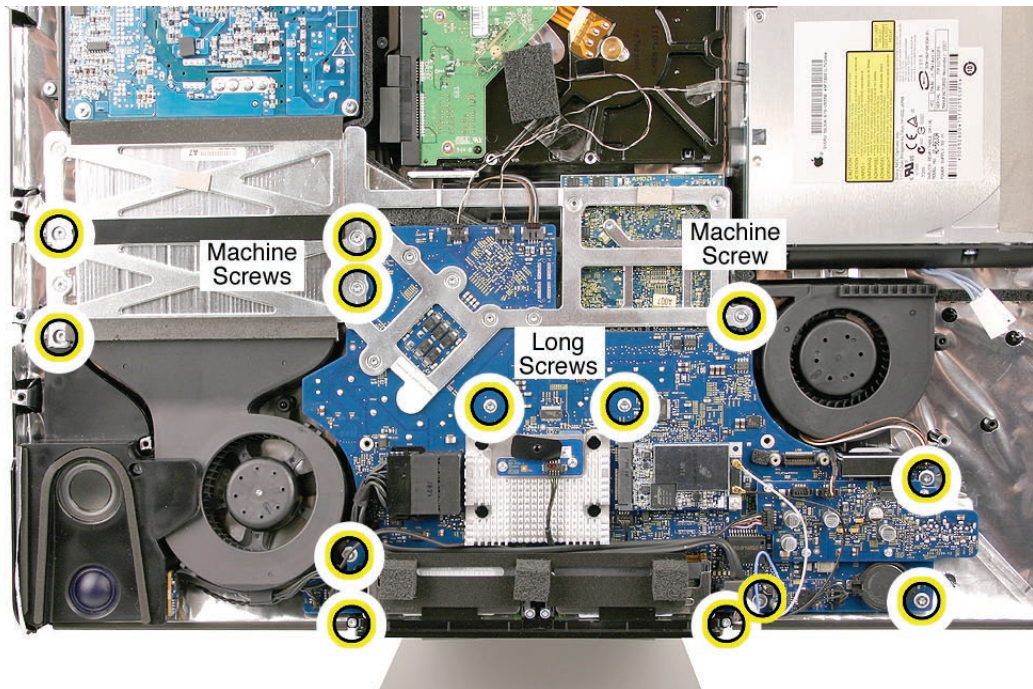
922-6800



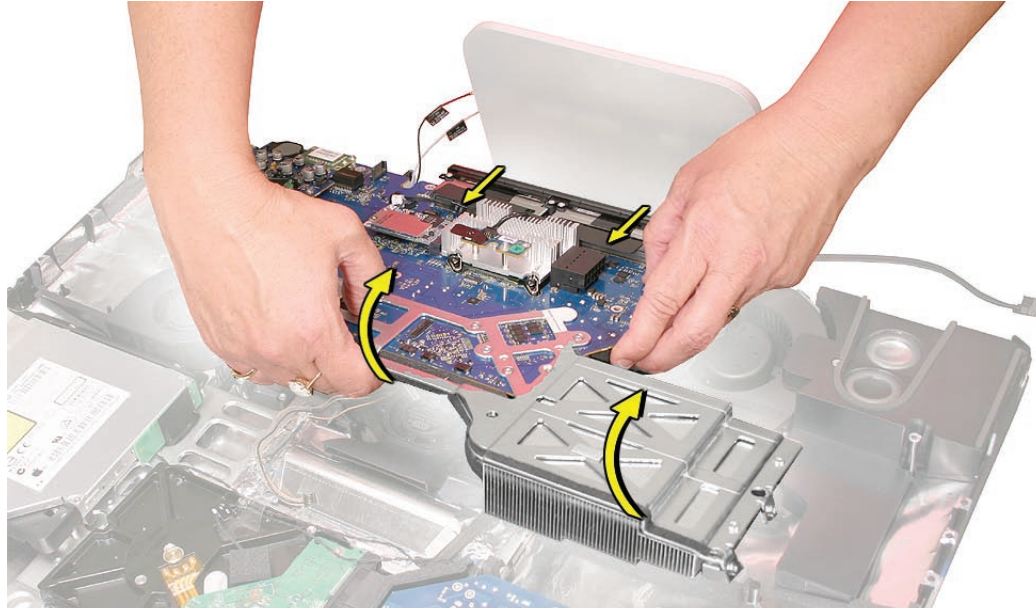
922-6842



922-8175

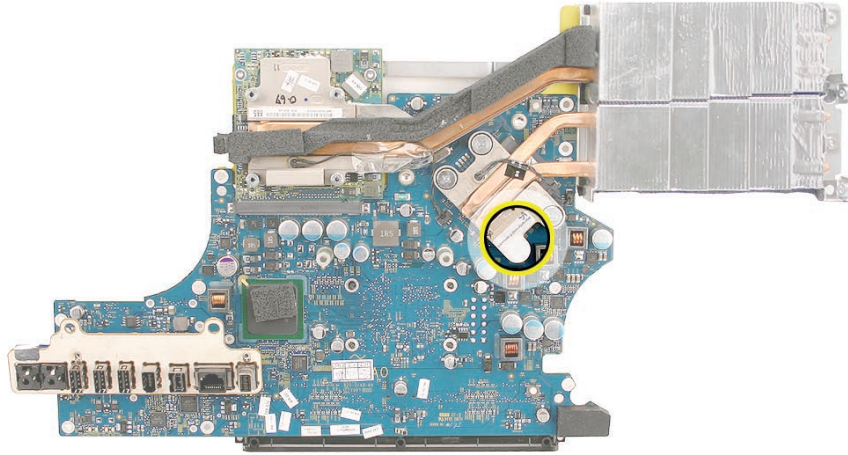


3. Lift the logic board up and out of the rear housing.
4. **Important:** When handling the logic board, never handle the board by the heatsink or metal frame.

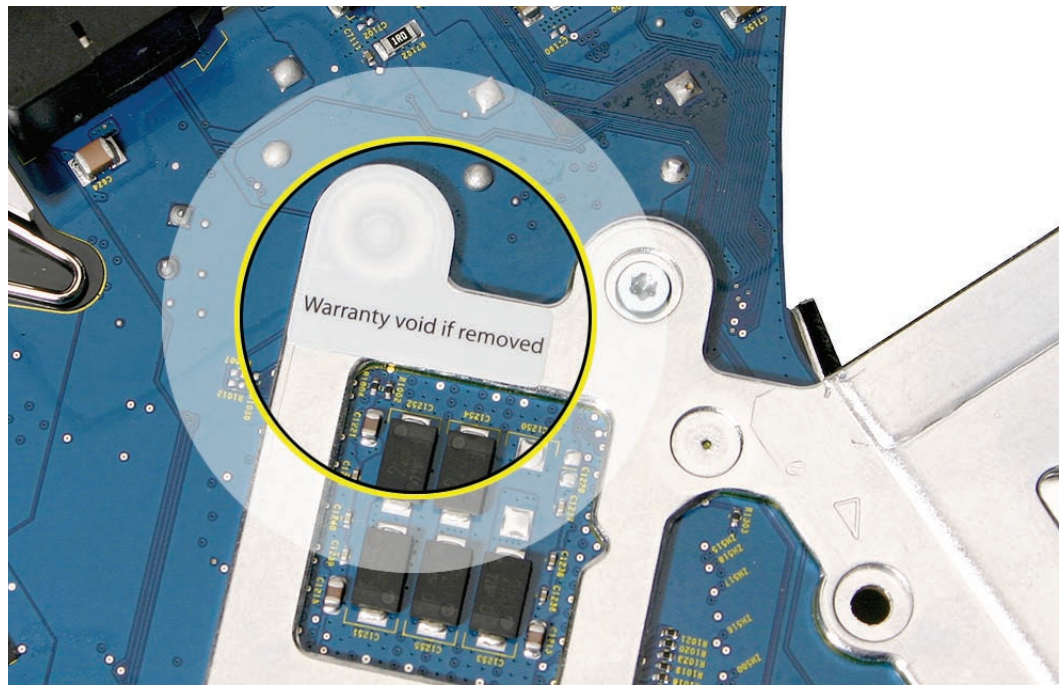


5. Transfer the following items from the logic board to the replacement logic board:
 - Video card
 - Audio board
 - AirPort card
 - IR board and cable
 - Bluetooth board and cable
 - Memory DIMMs
 - Black plastic cable holder (located below the IR board and heatsink)

-
6. **Important:** Verify that the tamper indicator labels on the front and back side of the CPU heat sink assembly are intact. If the tamper labels have been removed or tampered with, the logic board is not eligible for exchange.

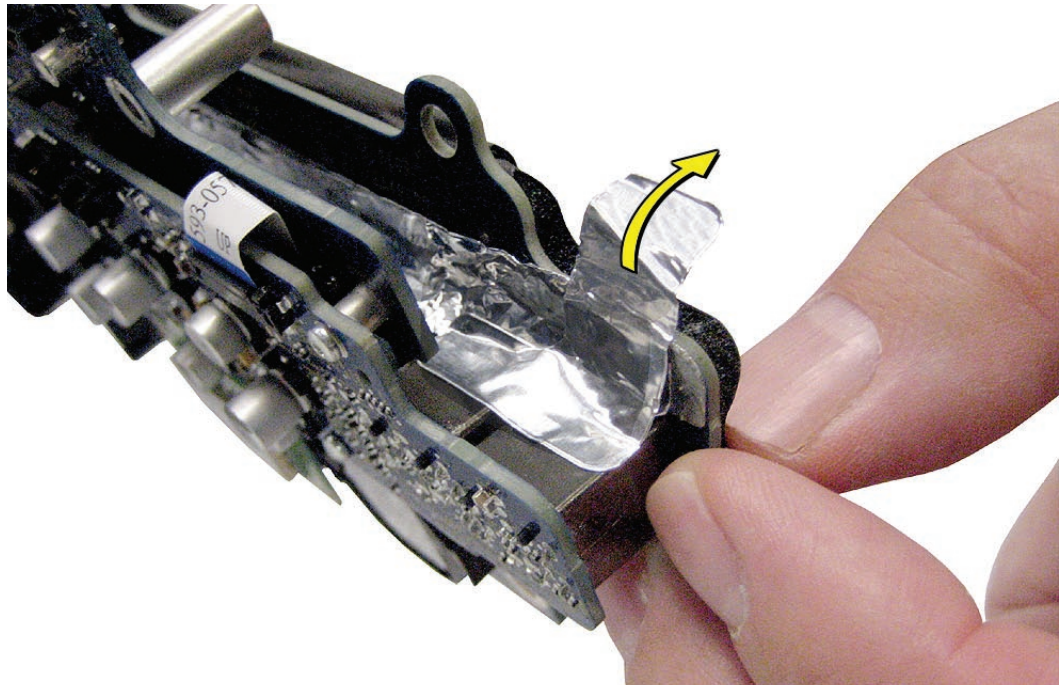


7. This shows the tamper-proof label on the top side of the logic board.



Replacing the Logic Board

1. If you removed the logic board to access another module, reinstall the board as is. However, if you are replacing the logic board with a new one, make sure the following parts are transferred to the new logic board:
 - Video card
 - Audio board
 - AirPort card
 - IR board and cable
 - Bluetooth board and cable
 - Memory DIMMs
 - Black plastic cable holder (located below the IR board and heatsink)
2. **Note:** A piece of EMI tape is included in the box with all replacement logic boards. Attach the EMI tape to the I/O port as shown. After the board is installed, attach the EMI tape to the rear housing, see step 10.



3. Move all the cables that connect to the top of the logic board out of the way so the logic board can be placed into the rear cover.

4. As you lower the board into the rear housing, line up the two T8 screw holes on the right and left side of the memory slots. Continue lowering the board into place lining up the other screw holes.

5. Replace the machine screws first; then replace the self-tapping screws.



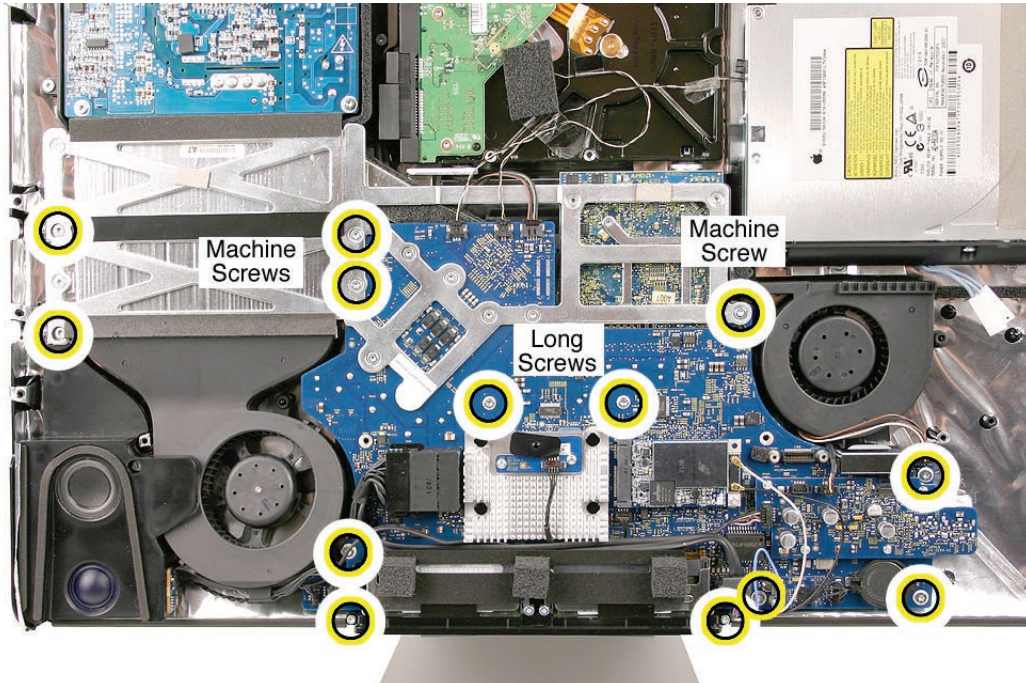
922-8173



922-6842

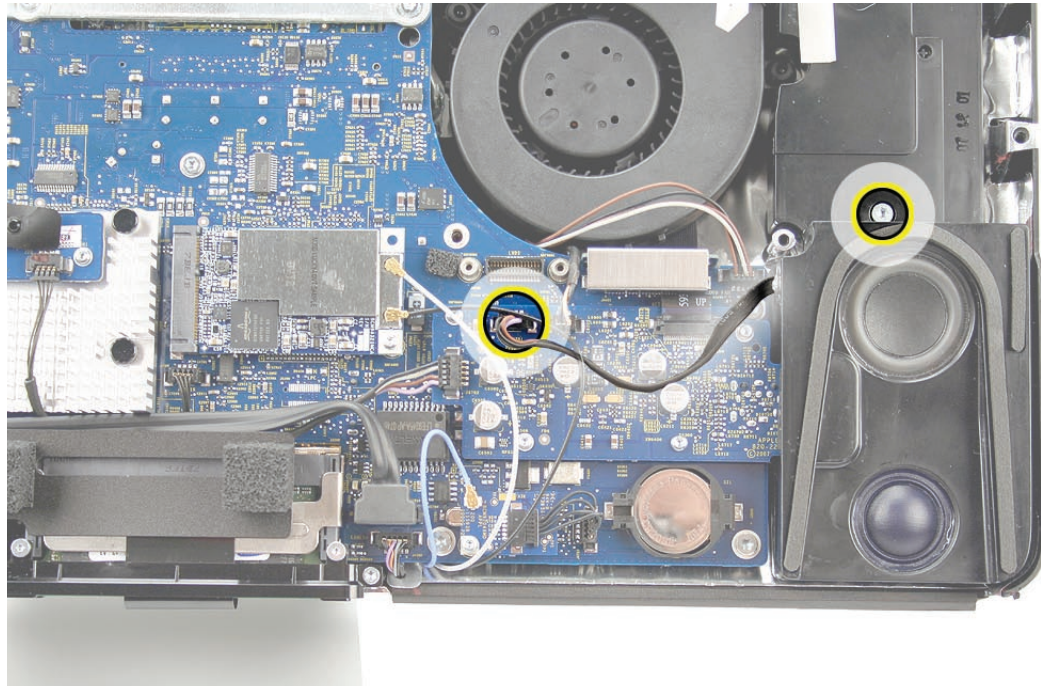


922-6800

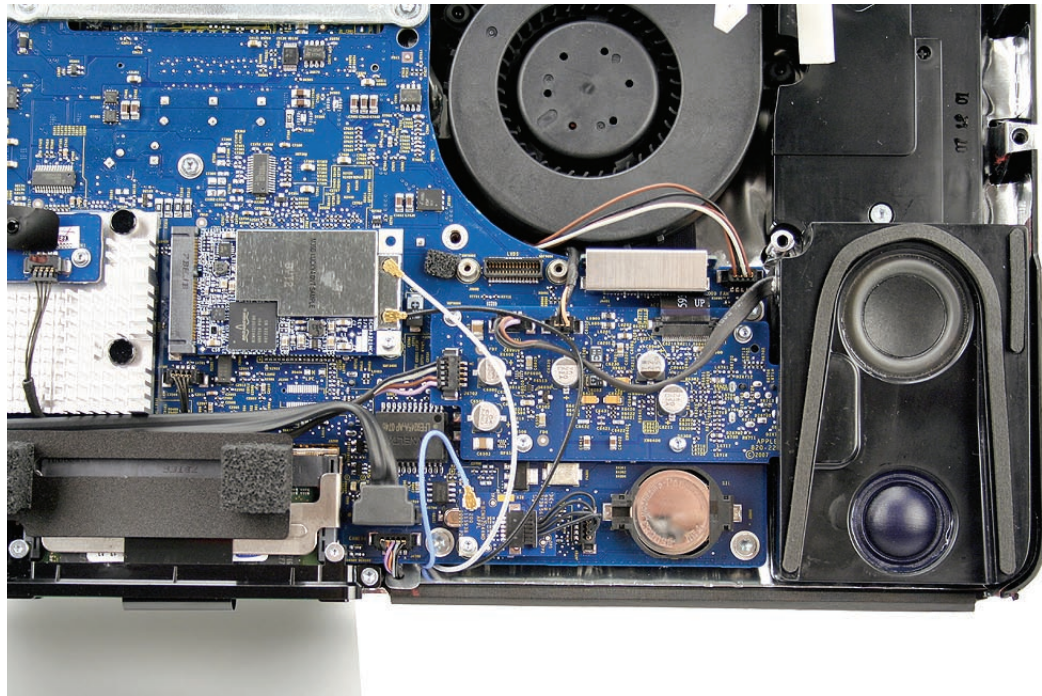


922-8175

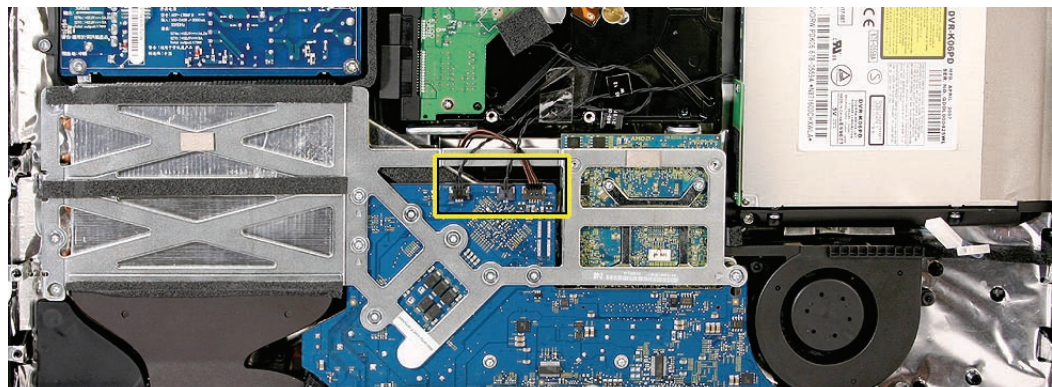
6. Replace the right speaker and connect the cable to the audio board.



7. Connect the following cables on the right side of the board. Note their cable routing.
 - AirPort antennas
 - Bluetooth antenna
 - Bluetooth cable (to the logic board)
 - Optical fan cable (to the right of the optical cable clip)
 - Microphone cable (to the audio board)
 - Left speaker cable (to the audio board)
 - Hard drive SATA cable
 - Camera cable
 - IR cable (if it was removed)

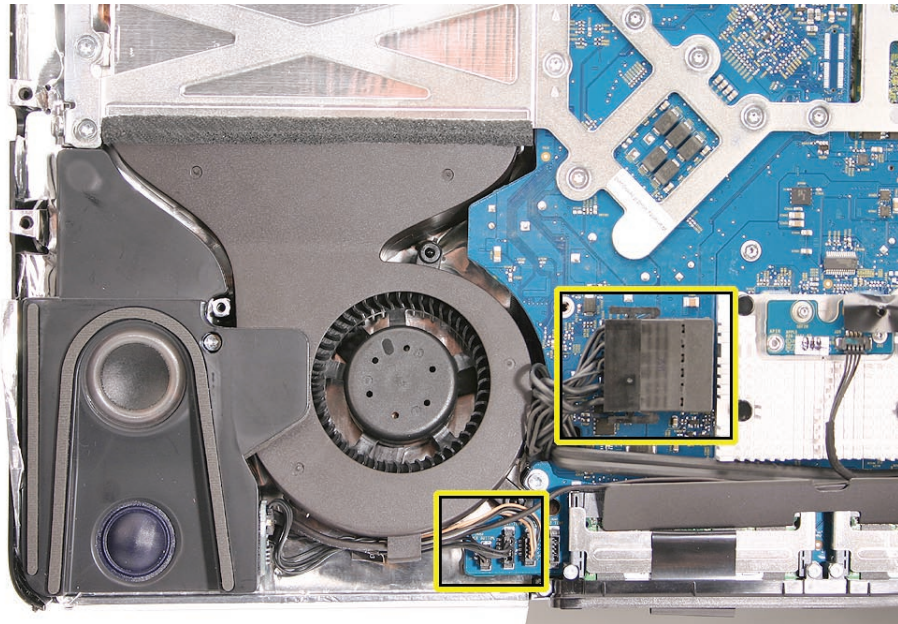


8. At the top of the board, connect the hard drive sensor cable, the optical sensor cable, and the hard drive fan cable.

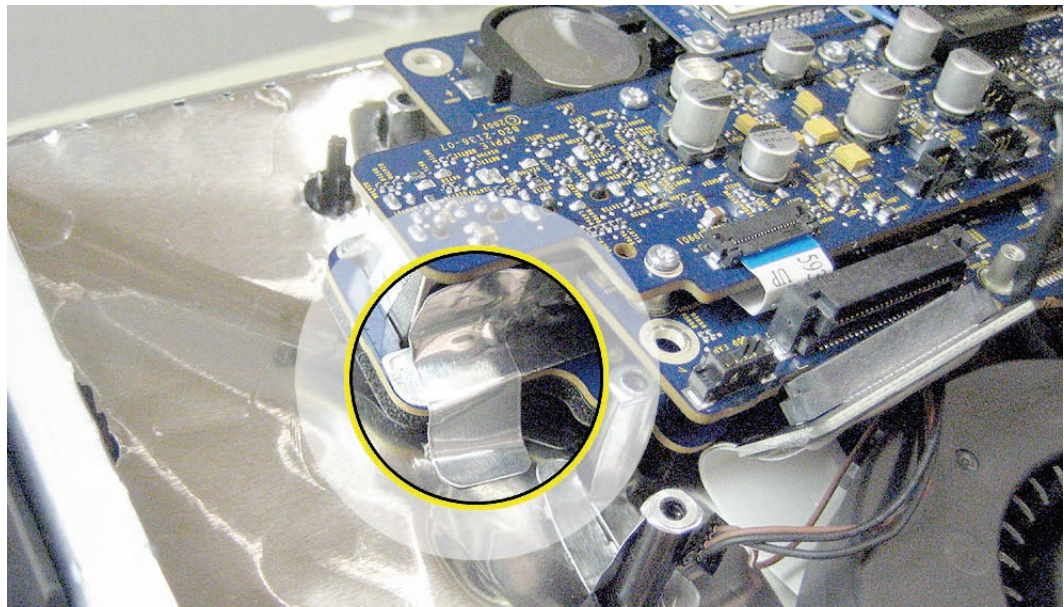


9. On the left side of the logic board, connect the following cables, routing them as shown:
 - Power button (2-pin)
 - Ambient temp sensor (attaches to the sensor on the speaker and to the logic board)
 - CPU fan
 - DC power

Note: The empty connector to the right of the CPU fan connector is for the LCD temp sensor cable. When the panel is replaced, connect the temp sensor cable.



10. With the logic board in place, press the piece of EMI tape (on the I/O ports) onto the rear housing.



-
11. [Replace the display panel.](#)
 12. [Replace the front bezel.](#)
 13. [Clean and replace the glass panel.](#) **Note:** This step is very important. Follow the procedures to ensure the glass is clean and free of particles.
 14. [Replace the access door.](#)



Video Card

Tools

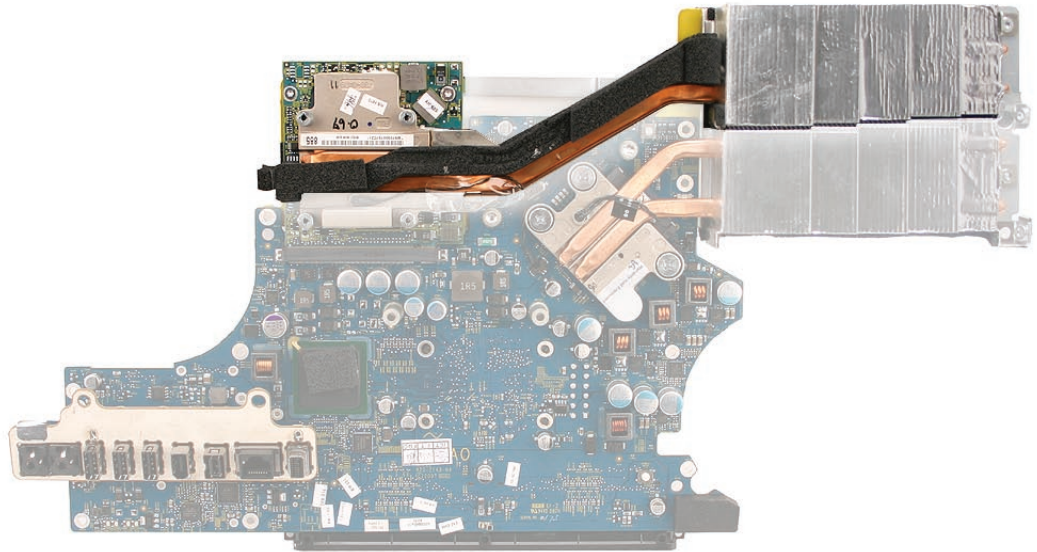
- Torx T8 screwdriver

Preliminary Steps

Before you begin, remove the following:

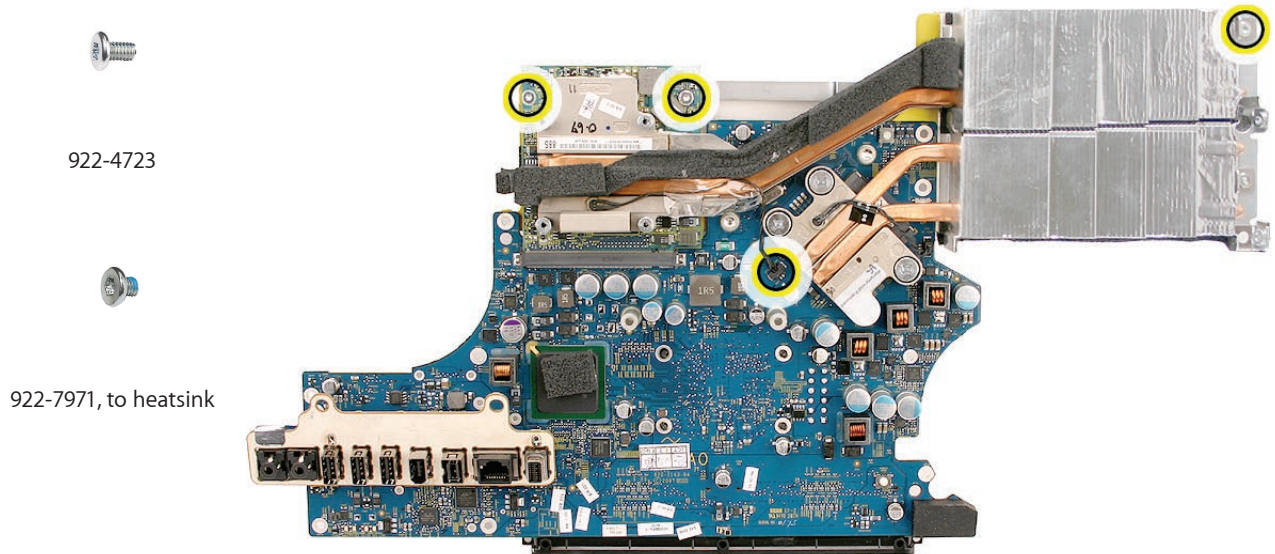
- [Access door](#)
- [Glass panel](#)
- [Front bezel](#)
- [LCD display panel](#)
- [Speaker, right](#)
- [Logic board](#)

Part Location

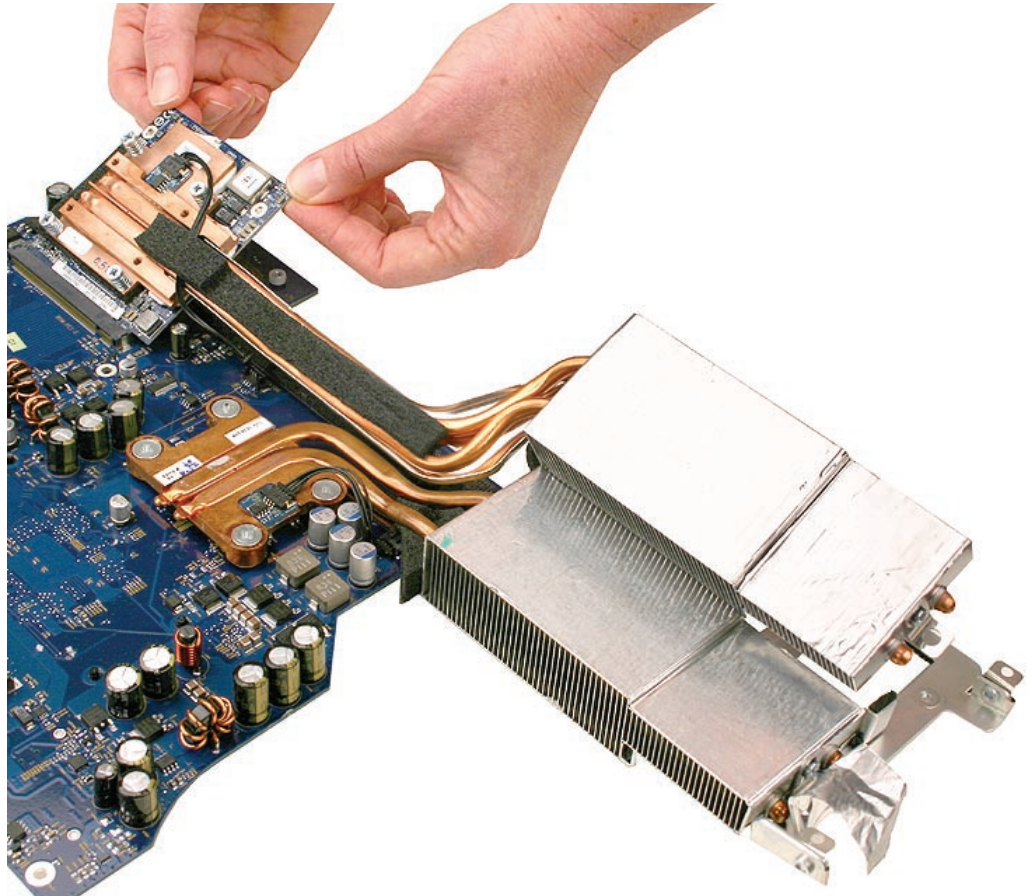


Removing the Video Card

1. Remove the three screws and disconnect the cable from the logic board.



2. Tilt up the video card with attached heatsink, and disconnect it from the card connector on the logic board (as shown with the iMac (24-inch) video card.)

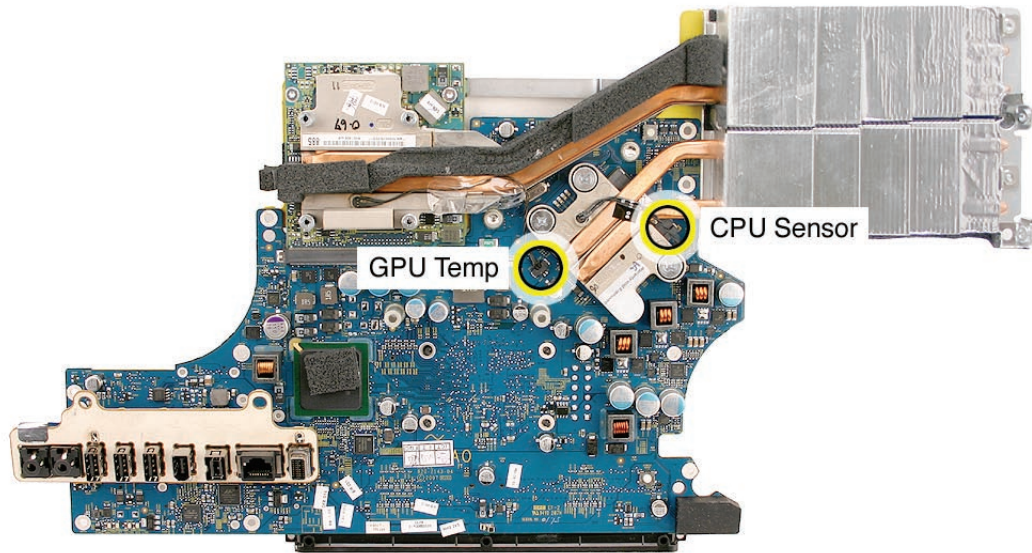


-
3. When handling the video card, hold it by the heat pipe brace as demonstrated on the previous iMac model video card.

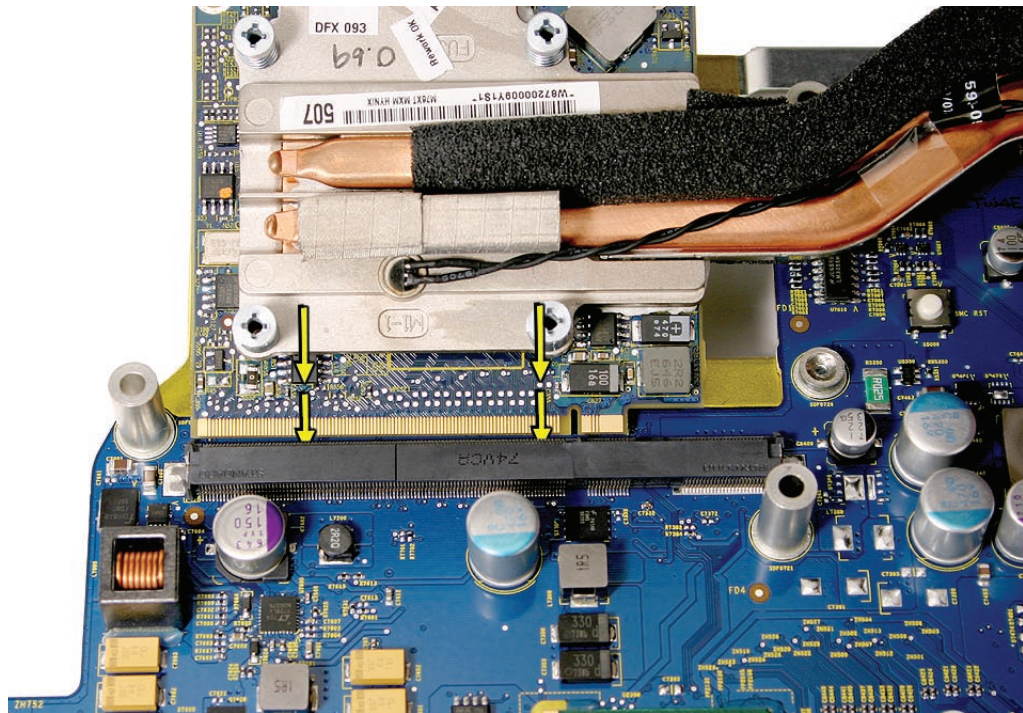


Replacing the Video Card

1. Make sure the CPU and GPU temp sensors on the back side of the logic board are connected.



2. Connect the video card to the logic board, lining up the gold fingers on the card with the video card slot on the logic board.



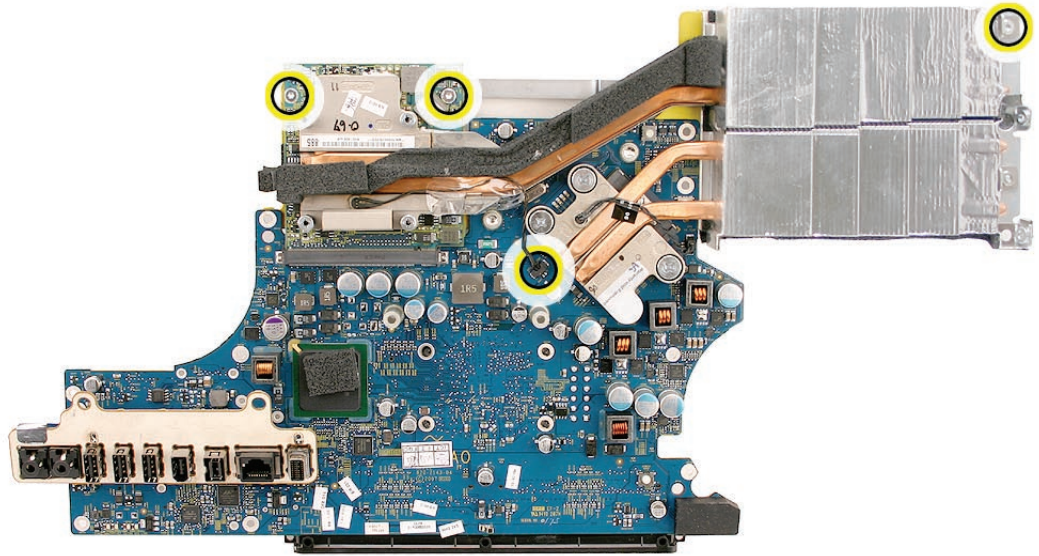
3. Install the three screws on the video board and connect the graphics sensor cable to the back of the logic board. **Replacement Note:** The shorter screw attaches at the far right end of the video card heatsink.



922-7971, to heatsink



922-4723



4. [Replace the logic board.](#)
5. [Replace the right speaker.](#)
6. [Replace the display panel.](#)
7. [Replace the front bezel.](#)
8. [Clean and replace the glass panel.](#) **Note:** This step is very important. Follow the procedures to ensure the glass is clean and free of particles.
9. [Replace the access door.](#)



Hard Drive Fan

Tools

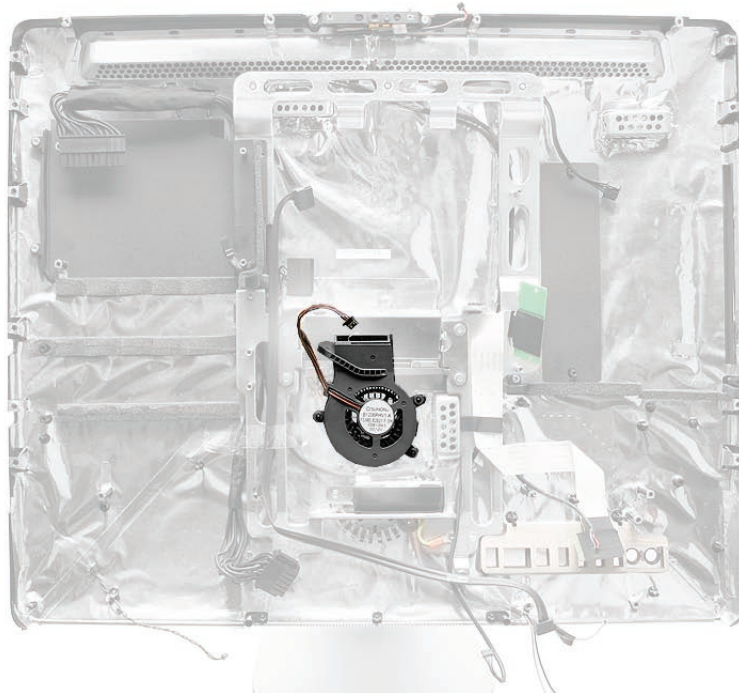
No tools are required to remove the hard drive fan.

Preliminary Steps

Before you begin, remove the following:

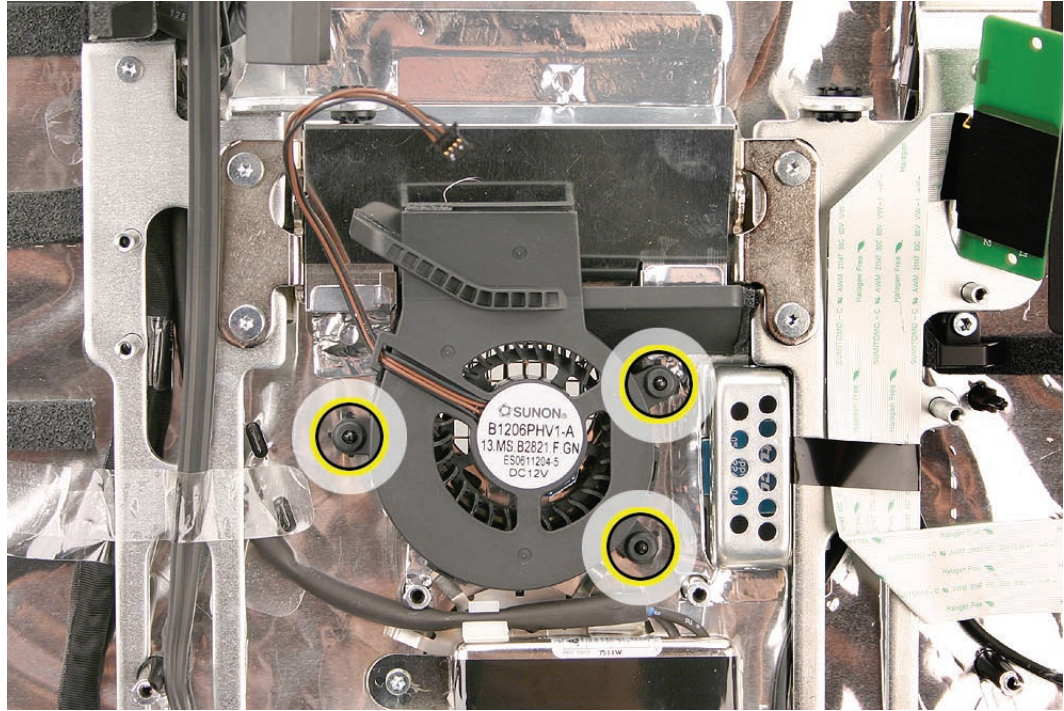
- [Access door](#)
- [Glass panel](#)
- [Front bezel](#)
- [LCD display panel](#)
- [Speaker, right](#)
- [Logic board](#)

Part Location



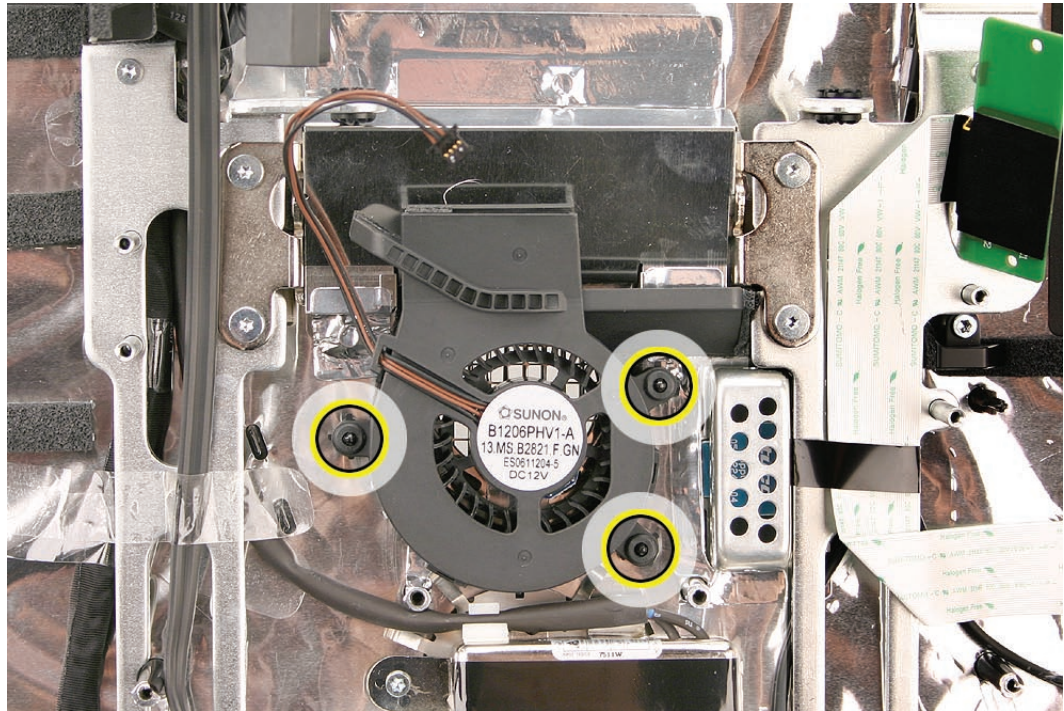
Removing the Hard Drive Fan

Once the logic board has been removed, the fan can be lifted straight up and off of the three guide posts.

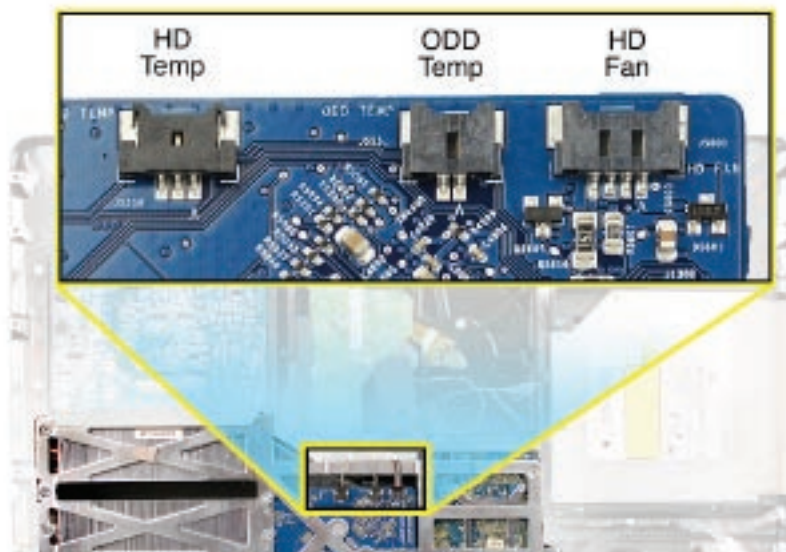


Replacing the Hard Drive Fan

1. Install the hard drive fan onto the guide posts.



2. [Replace the logic board.](#)
3. [Replace the right speaker.](#)
4. Make sure the hard drive temp sensor cable, the optical sensor cable, and the hard drive fan cable are connected at the top of the logic board before replacing the LCD panel.



-
5. [Replace the display panel.](#)
 6. [Replace the front bezel.](#)
 7. [Clean and replace the glass panel.](#) **Note:** This step is very important. Follow the procedures to ensure the glass is clean and free of particles.
 8. [Replace the access door.](#)



Audio Board

Tools

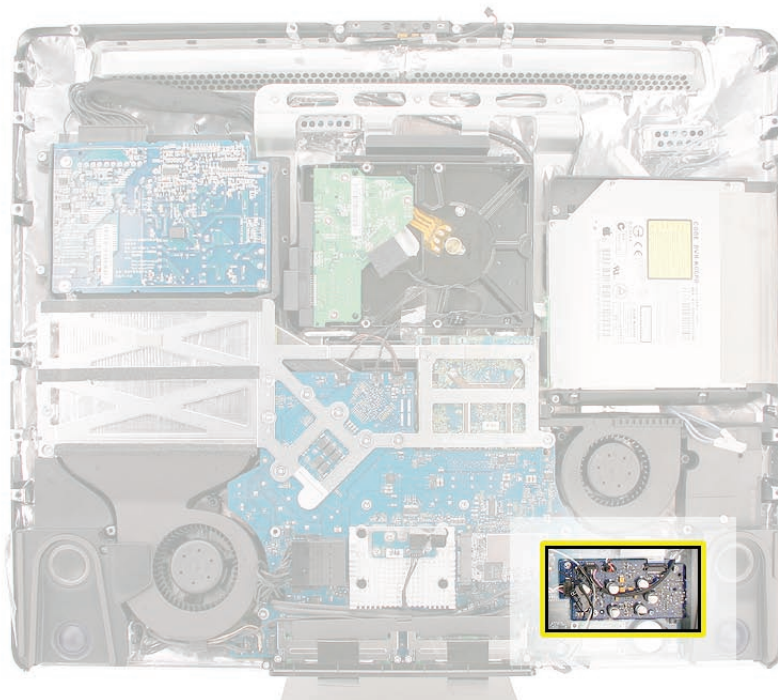
- Torx T6 screwdriver

Preliminary Steps

Before you begin, remove the following:

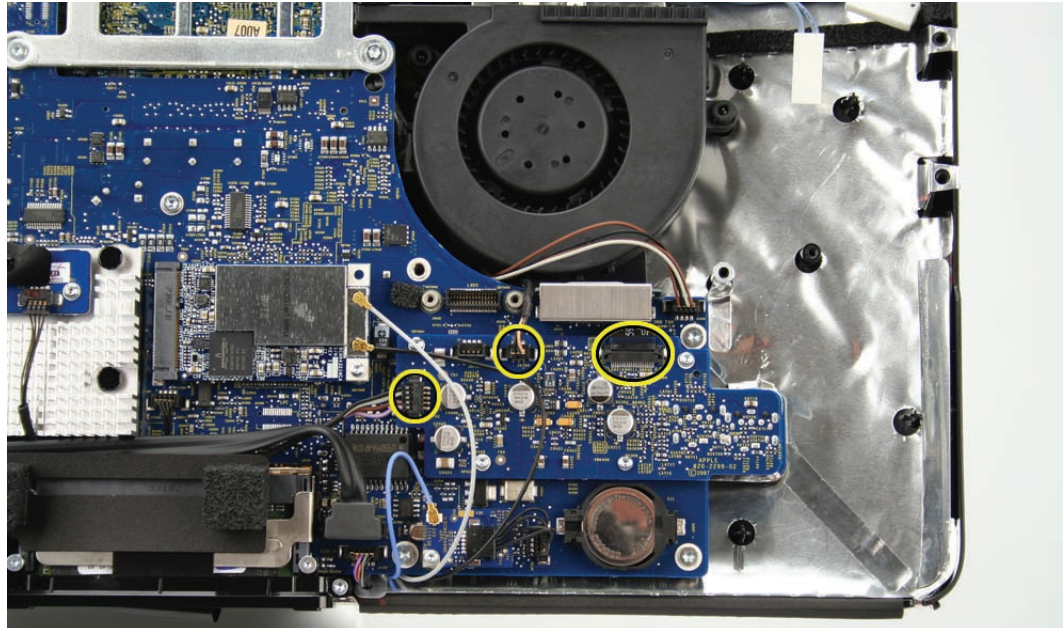
- [Access door](#)
- [Glass panel](#)
- [Front bezel](#)
- [LCD display panel](#)
- [Speaker, right](#)

Part Location



Removing the Audio Board

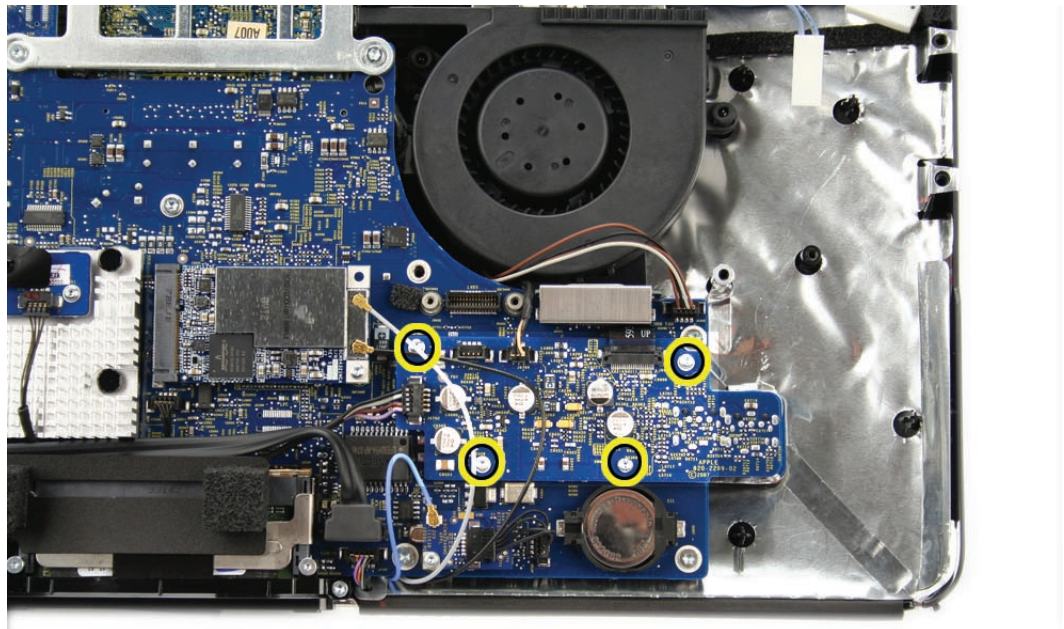
1. Disconnect the following:
 - Left speaker cable
 - Microphone cable
 - Tiny, flexible audio-to-logic board cable



2. Remove the four T6 screws.



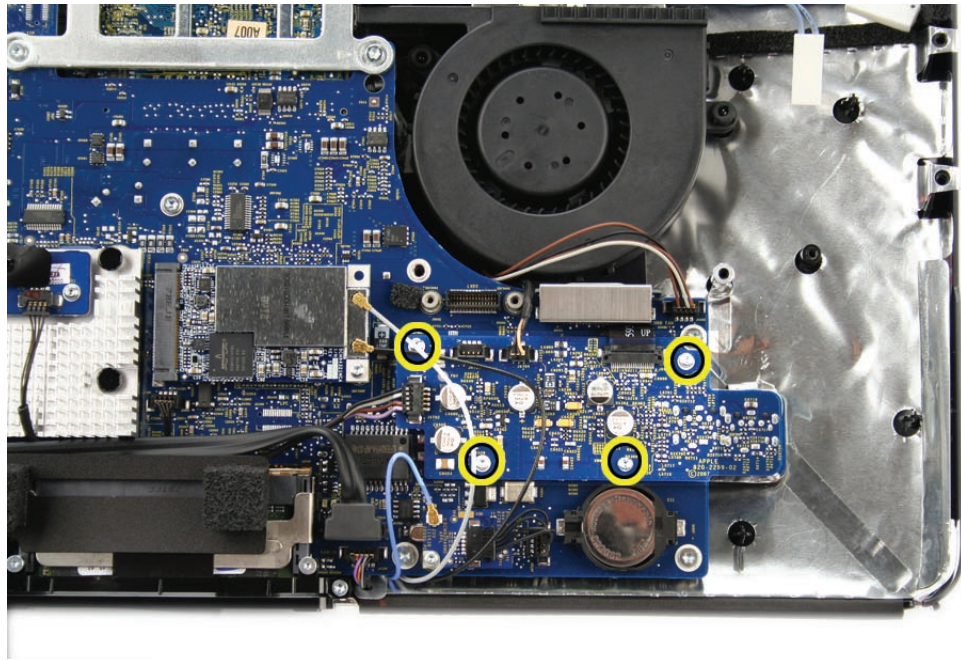
922-7010



3. Lift the audio board off the logic board.

Replacing the Audio Board

1. Install the audio board onto the logic board.
2. Replace the four T6 screws and connect the left speaker, the microphone, and the tiny, flexible audio board cable.



3. [Replace the right speaker.](#)
4. [Replace the display panel.](#)
5. [Replace the front bezel.](#)
6. [Clean and replace the glass panel.](#) **Note:** This step is very important. Follow the procedures to ensure the glass is clean and free of particles.
7. [Replace the access door.](#)



Camera Cable

Tools

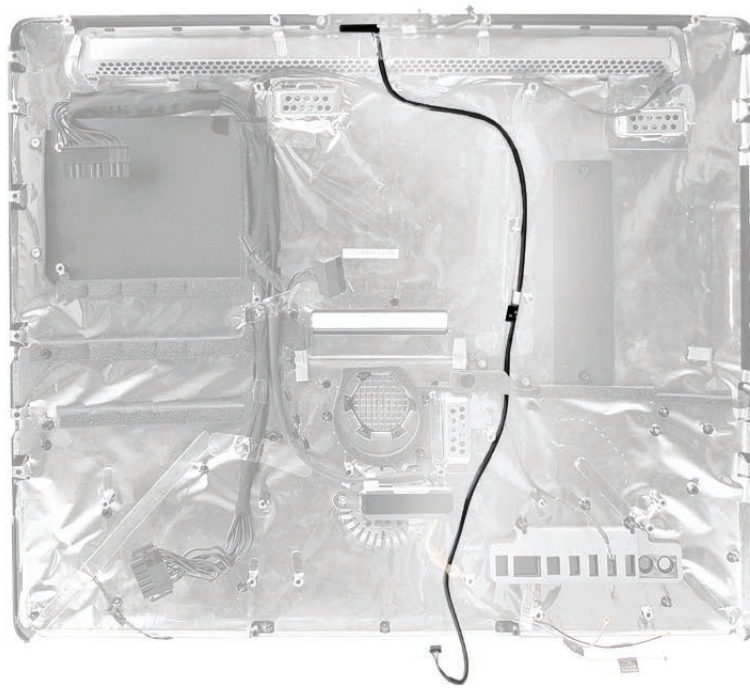
- T8 torx screwdriver

Preliminary Steps

Before you begin, remove the following:

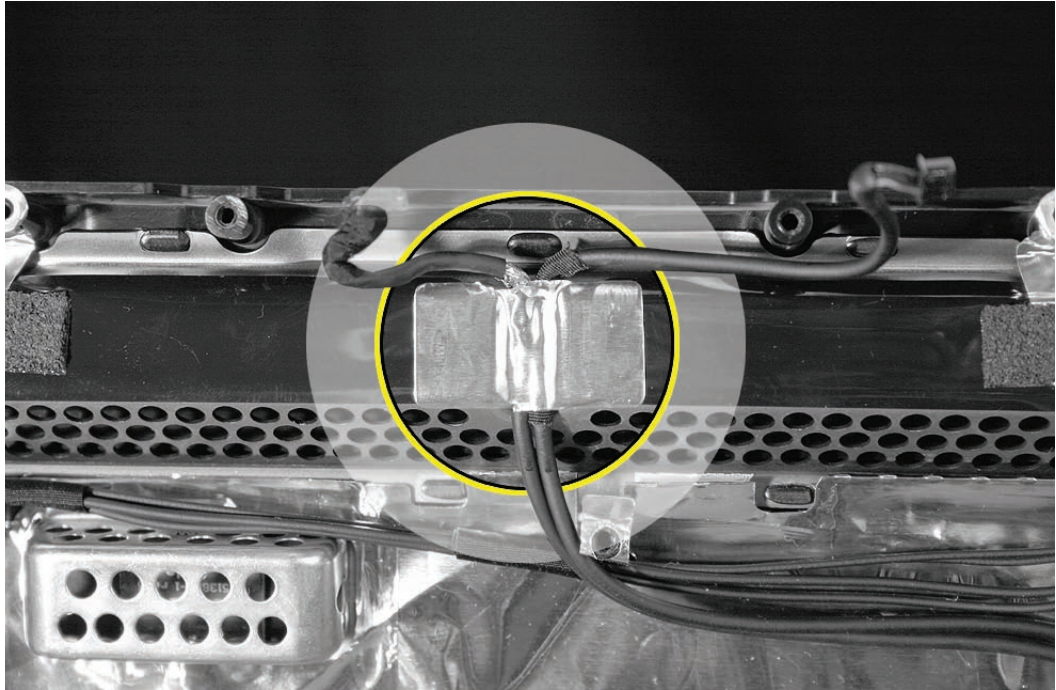
- [Access door](#)
- [Glass Panel](#)
- [Front bezel](#)
- [LCD display panel](#)
- [Speaker, right](#)
- [Speaker, left](#)
- [CPU fan](#)
- [Logic board](#)
- [Power Supply](#)
- [Hard drive](#)
- [Hard drive fan](#)
- [Hard drive SATA cable](#)
- [Optical drive](#)
- [Optical fan](#)
- [Optical flex cable](#)
- [Inverter](#)
- [Mechanism cover](#)
- [Stand](#)
- [Chassis](#)

Part Location

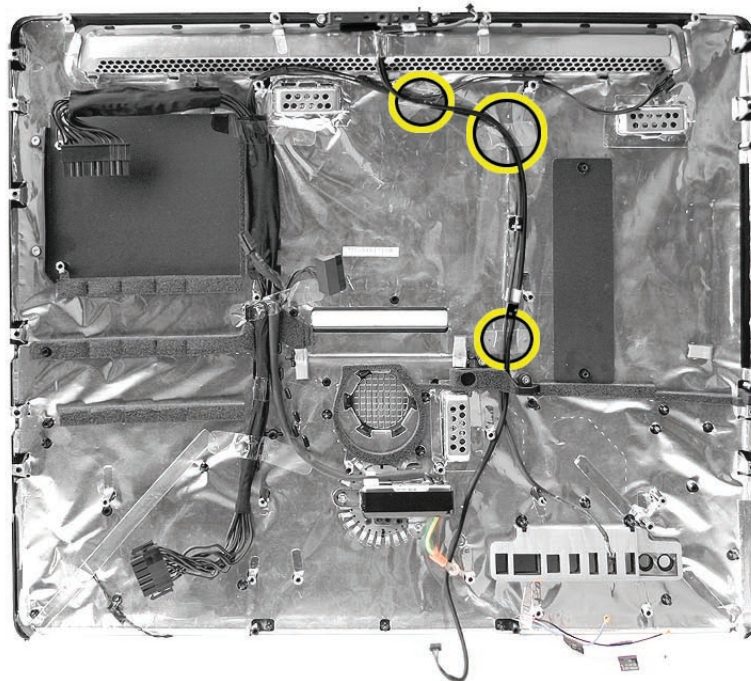


Removing the Camera Cable

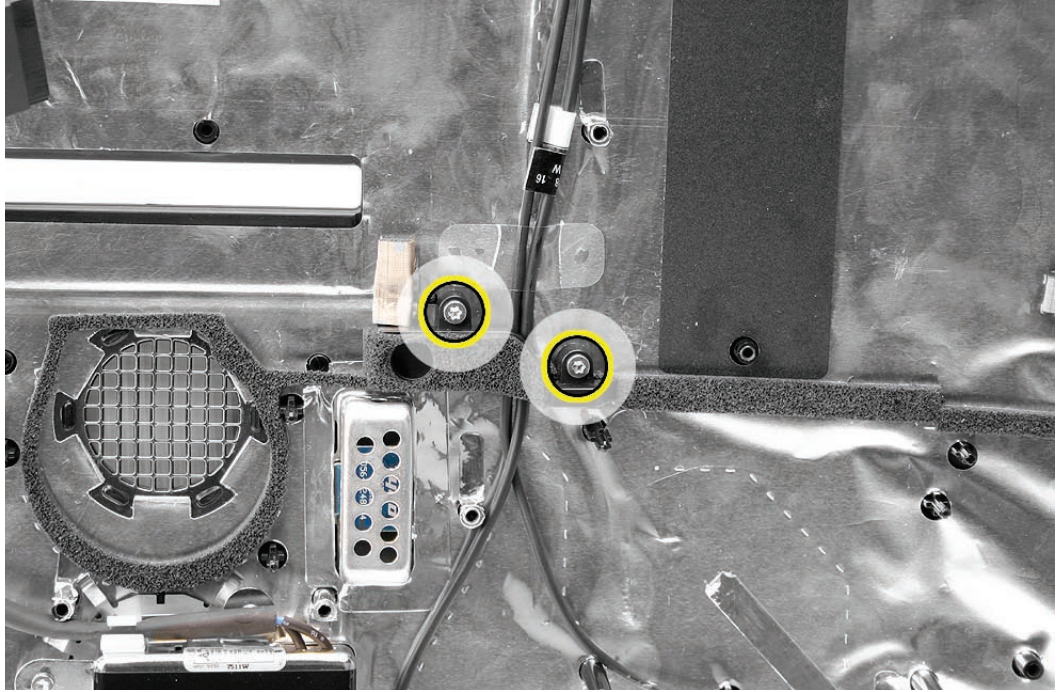
1. At the top, peel back the EMI tape that grounds the exposed part of the camera cable to the chassis. .



2. Remove the three pieces of clear Kapton tape securing the cable to the rear housing.

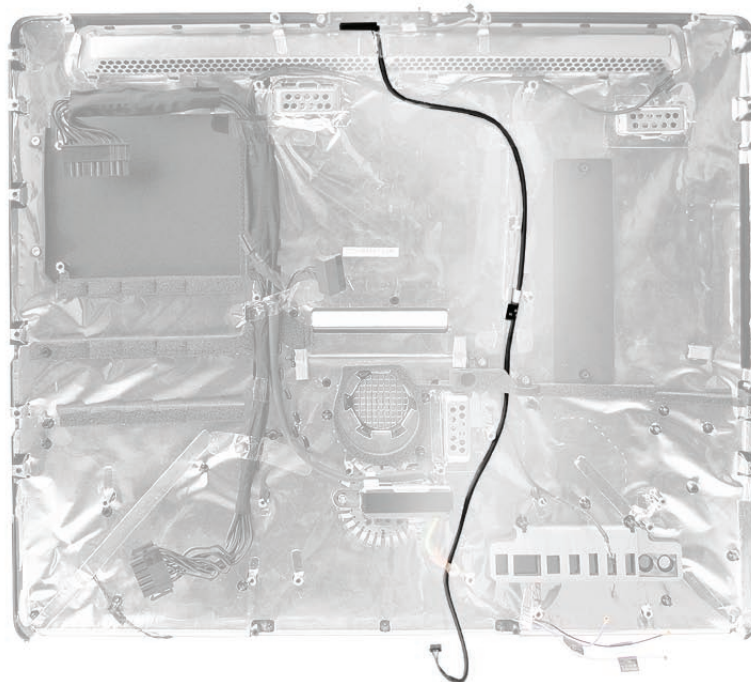


-
3. Near the middle of the rear housing, remove the two T8 screws on the cable guide.

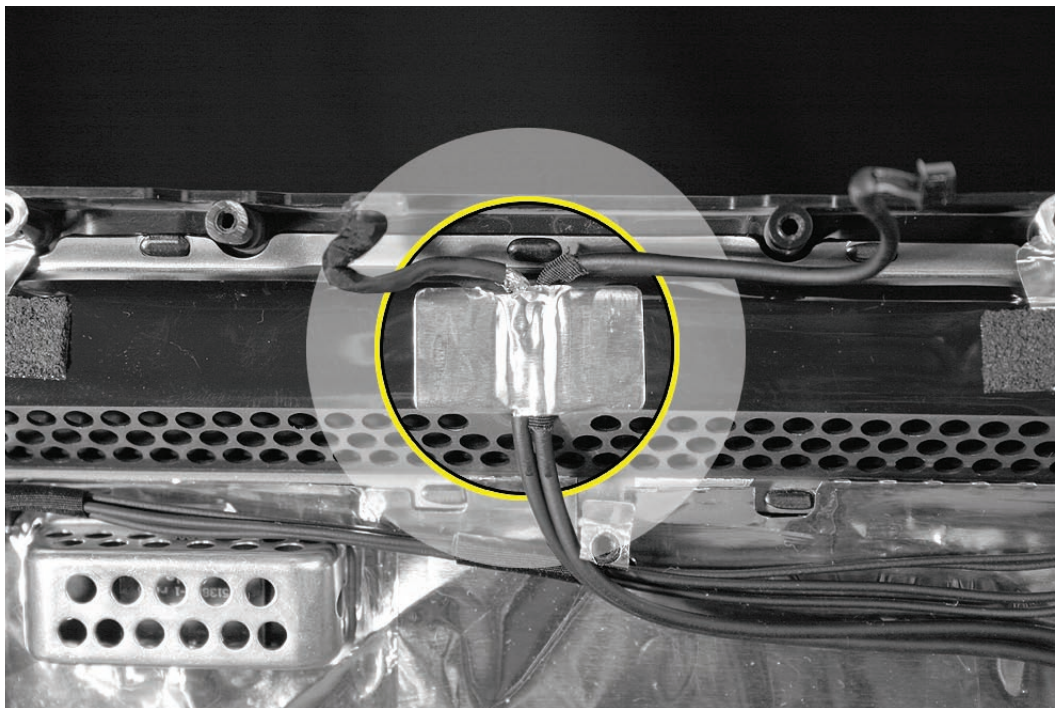


Replacing the Camera Cable

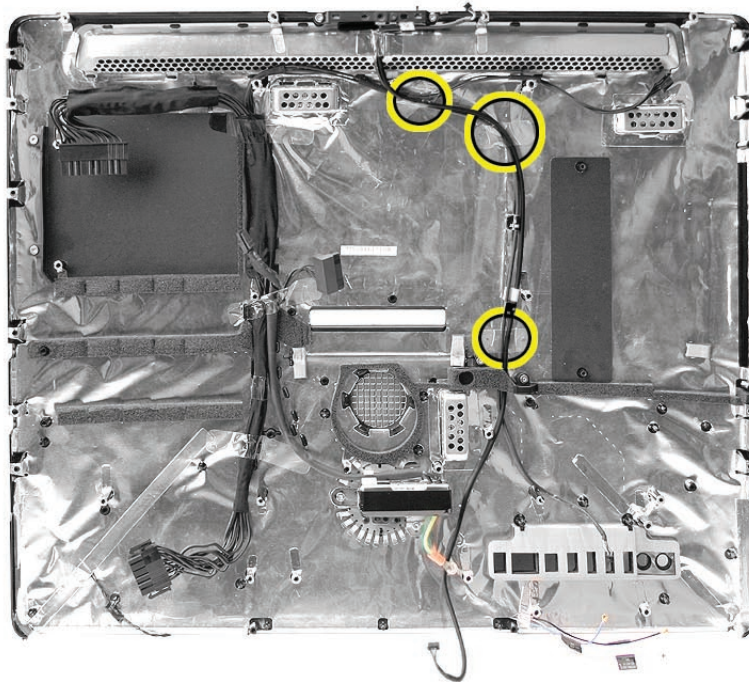
1. Route the camera cable into the rear housing as shown below.



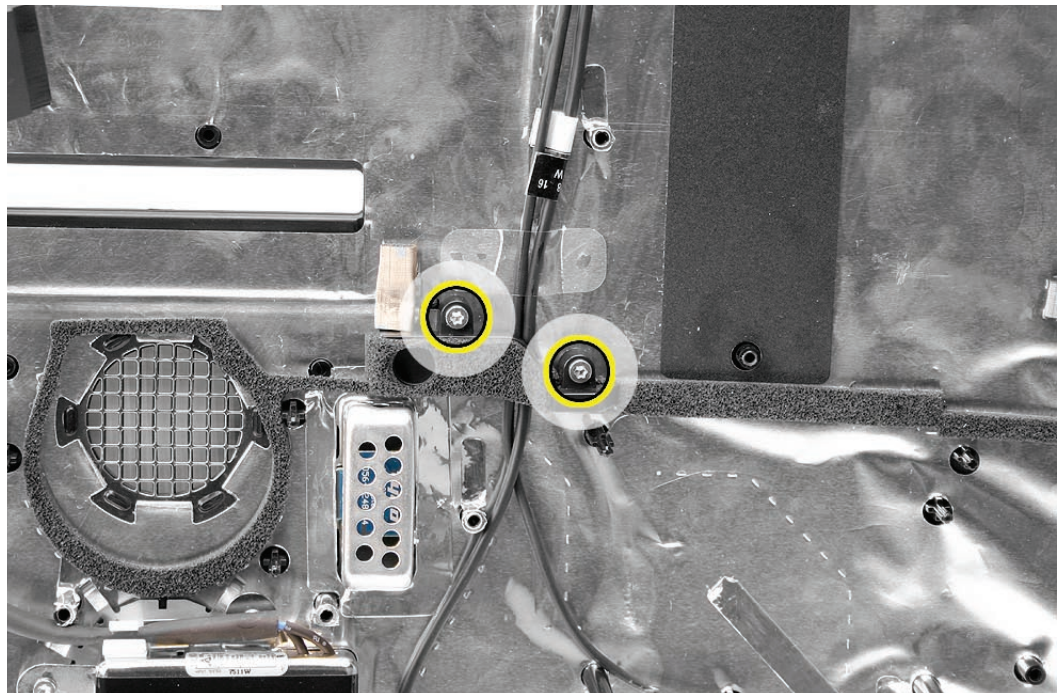
2. At the top, replace the piece of EMI tape grounding the camera cable to the chassis..



3. Replace the three pieces of Kapton tape onto the rear housing.



4. Replace the T8 screws on the black plastic cable holder.



5. [Replace the pressure wall and pressure wall screws.](#)
6. [Replace the chassis](#) and screws.

-
7. [Attach the AC inlet ground screw to the chassis.](#)
 8. [Replace the stand.](#)
 9. [Replace the hard drive](#)
 10. [Replace the optical fan.](#)
 11. [Replace the optical drive](#), flex drive cable and screws, and optical drive sensor cable.
 12. [Replace the logic board.](#)
 13. [Replace the right speaker.](#)
 14. [Replace the display panel.](#)
 15. [Replace the front bezel.](#)
 16. [Clean and replace the glass panel.](#) **Note:** This step is very important. Follow the procedures to ensure the glass is clean and free of particles.
 17. [Replace the access door.](#)



Microphone Cable

Tools

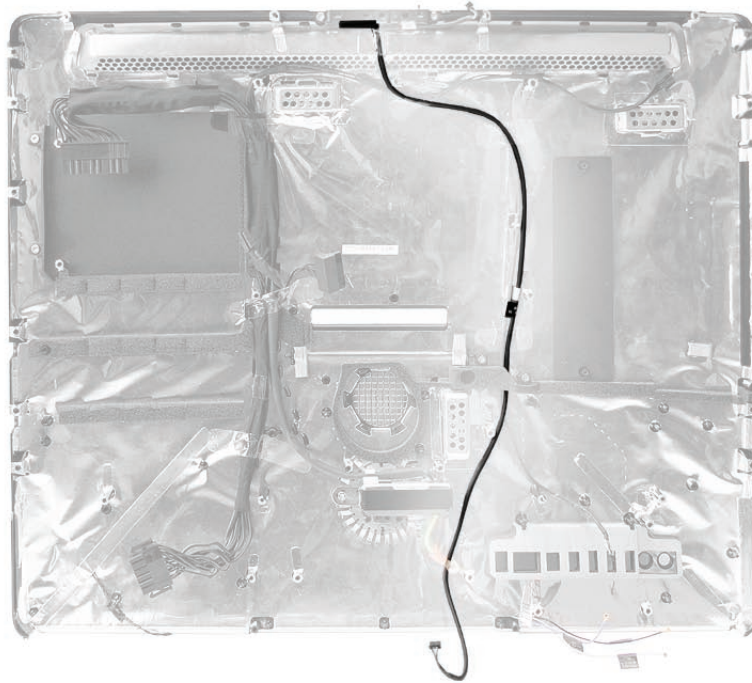
- T8 torx screwdriver

Preliminary Steps

Before you begin, remove the following:

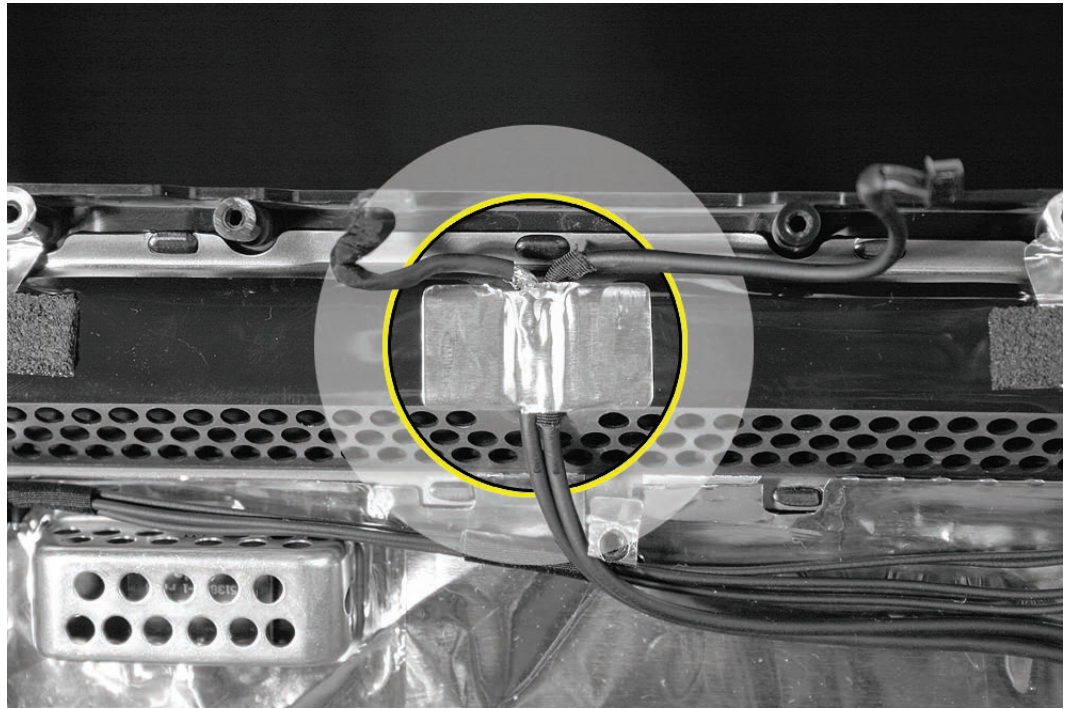
- [Access door](#)
- [Glass Panel](#)
- [Front bezel](#)
- [LCD display panel](#)
- [Speaker, right](#)
- [Speaker, left](#)
- [CPU fan](#)
- [Logic board](#)
- [Power Supply](#)
- [Hard drive](#)
- [Hard drive fan](#)
- [Hard drive SATA cable](#)
- [Optical drive](#)
- [Optical fan](#)
- [Optical flex cable](#)
- [Inverter](#)
- [Mechanism cover](#)
- [Stand](#)
- [Chassis](#)

Part Location

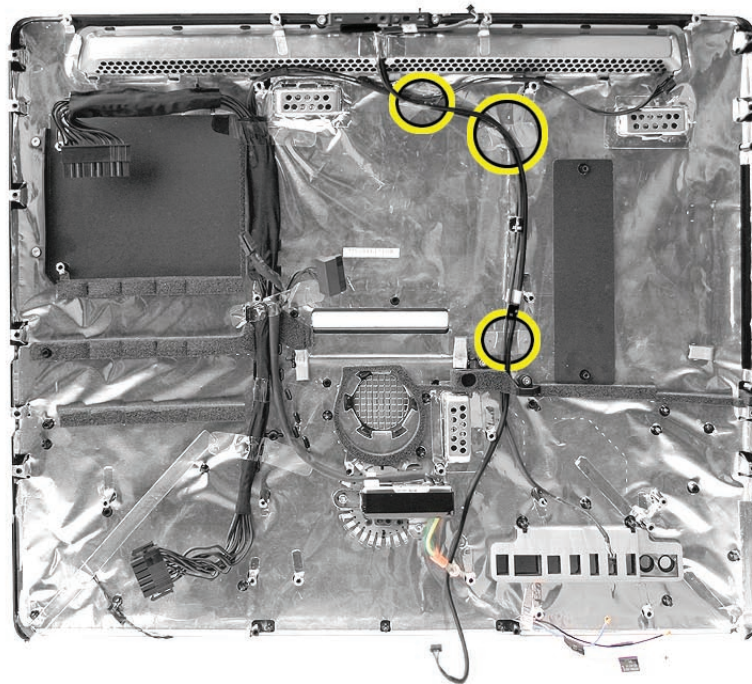


Removing the Microphone Cable

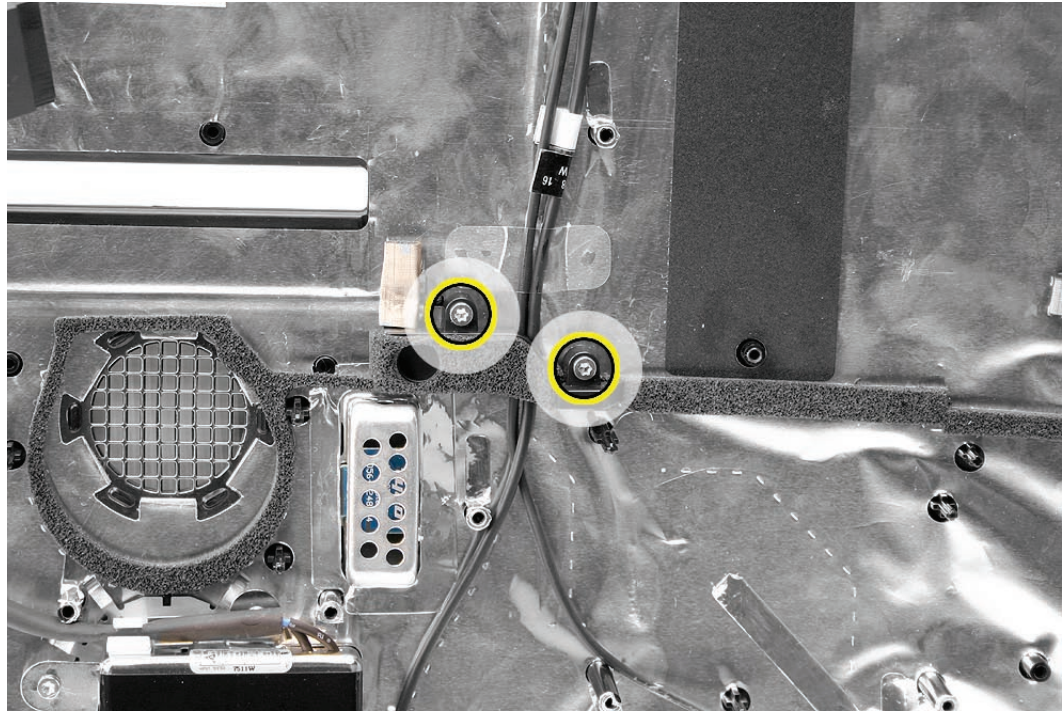
1. At the top, peel back the EMI tape that grounds the exposed part of the cable to the chassis.



2. Remove the three pieces of clear Kapton tape securing the cable to the rear housing.

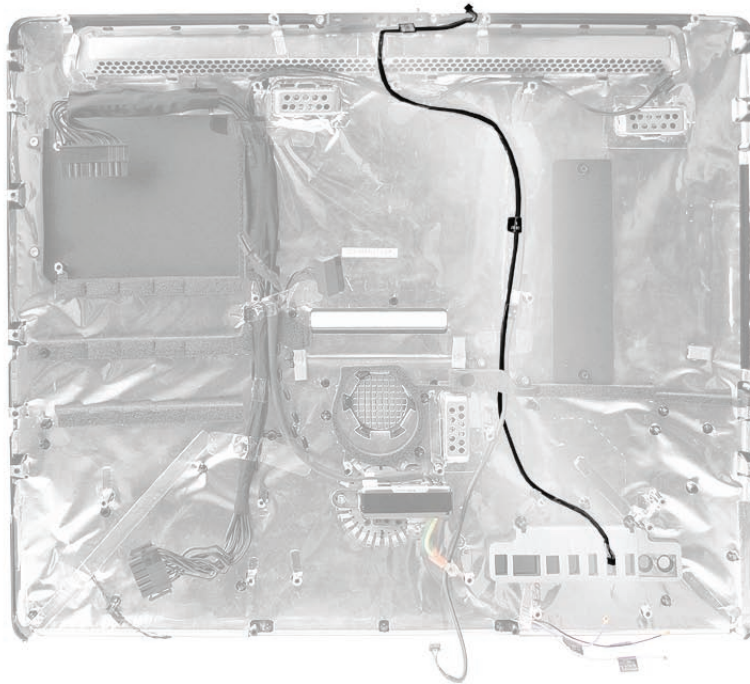


-
3. Near the middle of the rear housing, remove the two T8 screws on the cable guide.

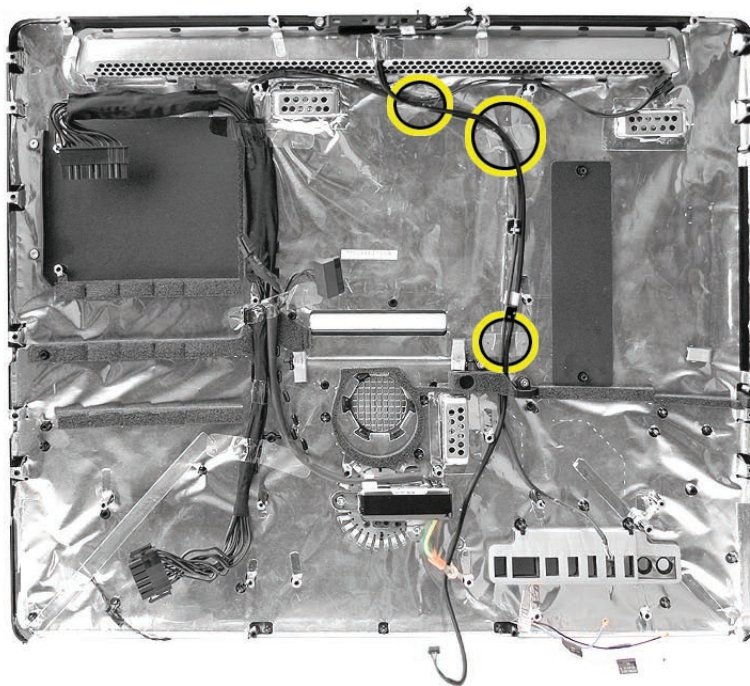


Replacing the Microphone Cable

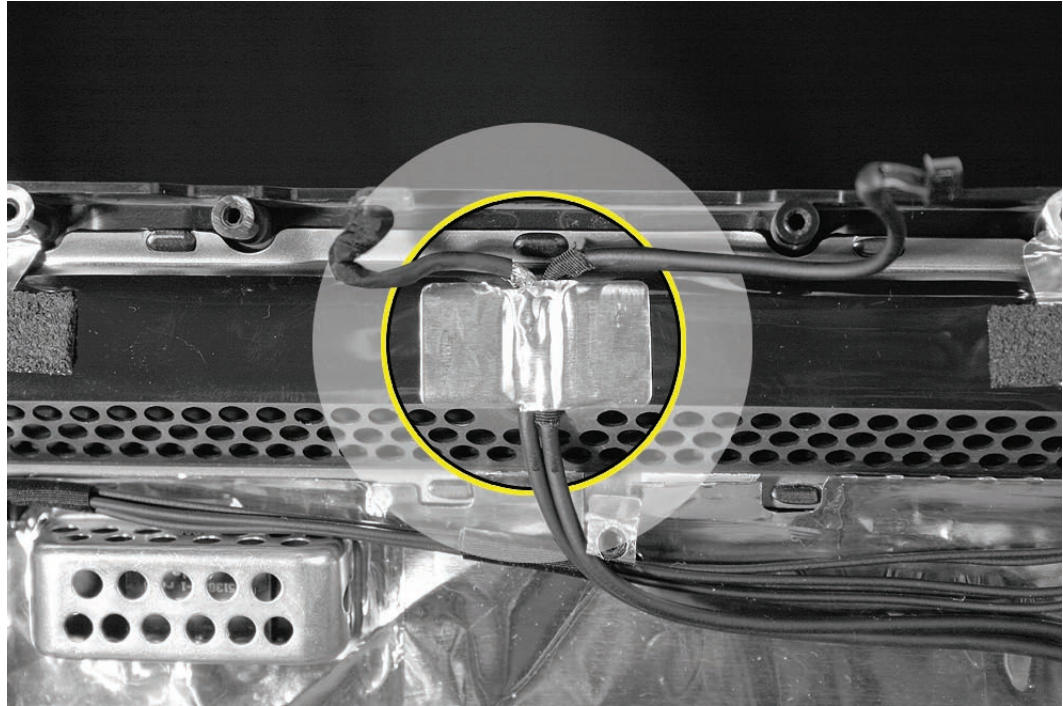
1. Route the camera cable as shown below.



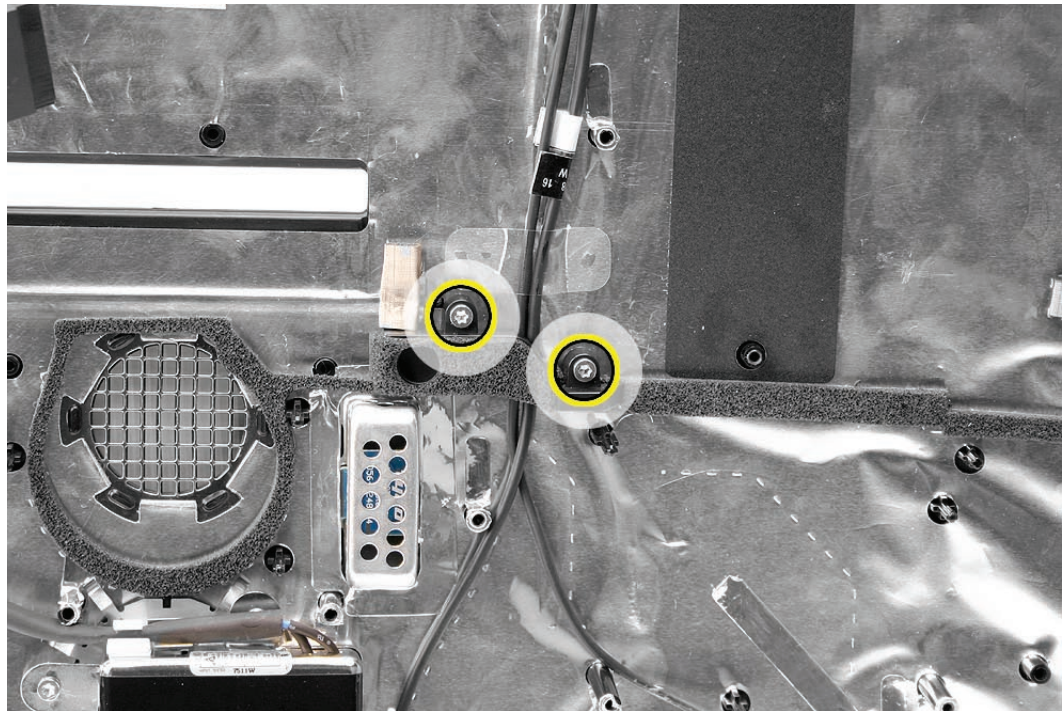
2. Replace the three pieces of clear Kapton tape securing the cable to the rear housing



3. Replace the EMI tape that grounds the exposed part of the cable to the chassis.



4. Near the middle of the rear housing, replace the two T8 screws on the cable guide.



5. [Replace the pressure wall and pressure wall screws.](#)

-
6. [Replace the chassis](#) and screws.
 7. [Attach the AC inlet ground screw to the chassis.](#)
 8. [Replace the stand.](#)
 9. [Replace the hard drive](#)
 10. [Replace the optical fan.](#)
 11. [Replace the optical drive](#), flex drive cable and screws, and optical drive sensor cable.
 12. [Replace the logic board.](#)
 13. [Replace the right speaker.](#)
 14. [Replace the display panel.](#)
 15. [Replace the front bezel.](#)
 16. [Clean and replace the glass panel.](#) **Note:** This step is very important. Follow the procedures to ensure the glass is clean and free of particles.
 17. [Replace the access door.](#)



Hard Drive Data Cable

Tools

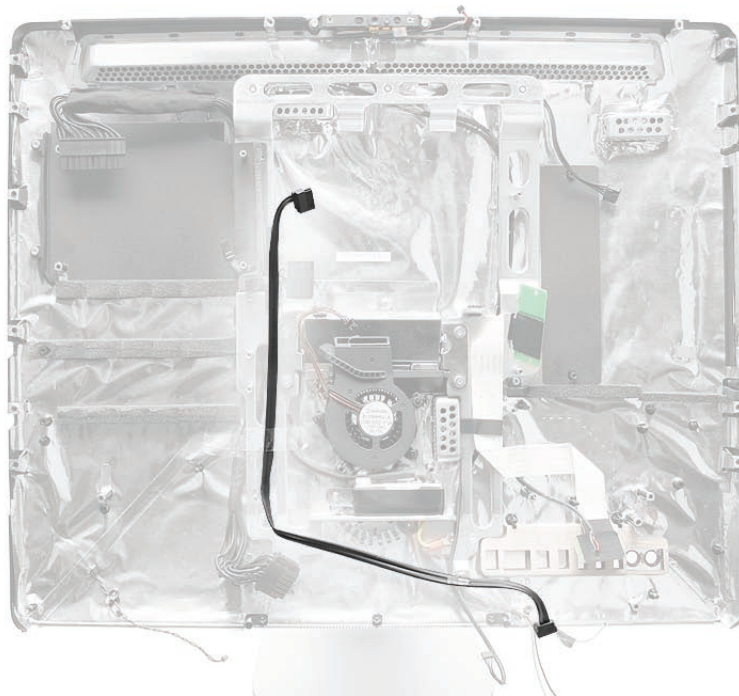
- No tools are required to remove the cable

Preliminary Steps

Before you begin, remove the following:

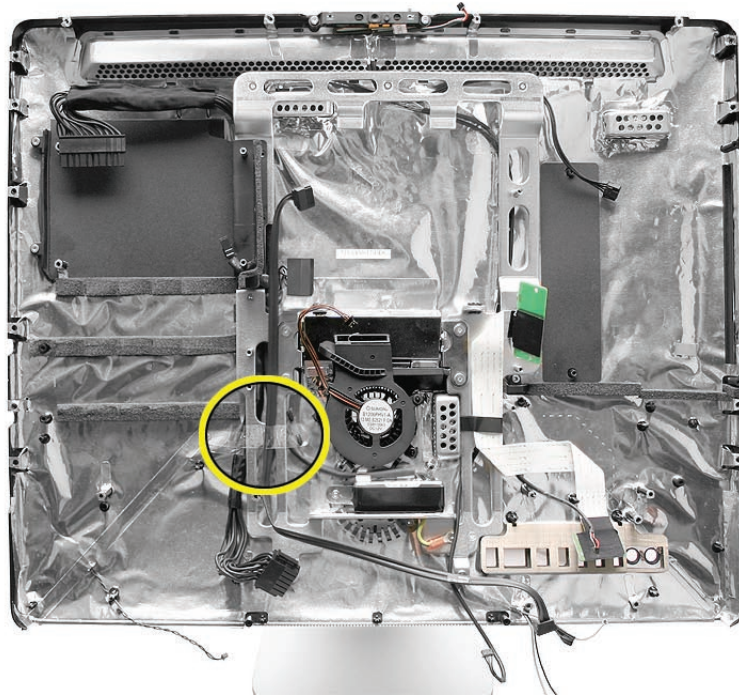
- [Access door](#)
- [Glass Panel](#)
- [Front bezel](#)
- [LCD display panel](#)
- [Speaker, right](#)
- [Logic board](#)
- [Hard drive](#)

Part Location



Removing the Hard Drive Data Cable

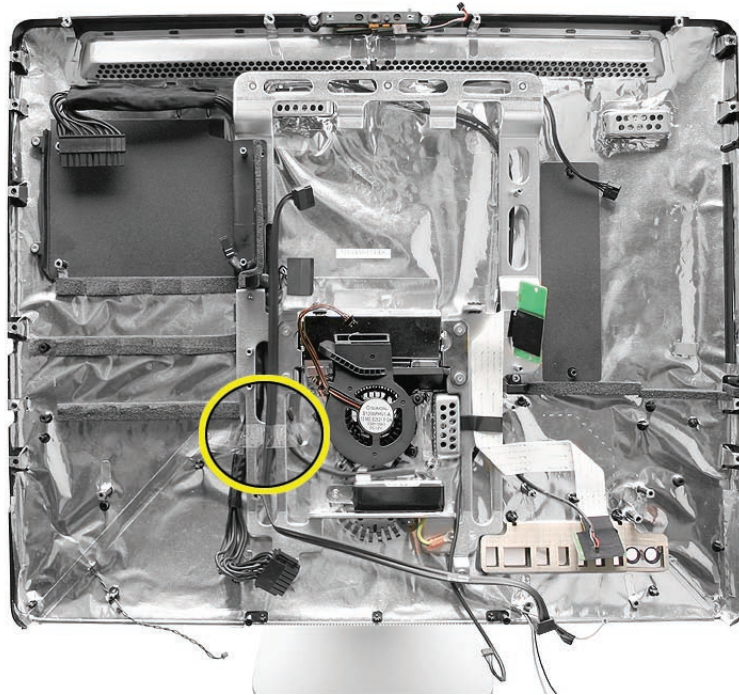
1. Remove the tape securing the data cable to the chassis.



2. Lift the cable from the chassis.

Replacing the Hard Drive Data Cable

1. Position the hard drive SATA cable on top of the chassis



2. Secure the cable to the chassis with clear kapton tape.
3. [Replace the logic board.](#)
4. [Replace the hard drive.](#)
5. [Replace the right speaker.](#)
6. [Replace the display panel.](#)
7. [Replace the front bezel.](#)
8. [Clean and replace the glass panel.](#) **Note:** This step is very important. Follow the procedures to ensure the glass is clean and free of particles.
9. [Replace the access door.](#)



Mechanism Cover

Tools

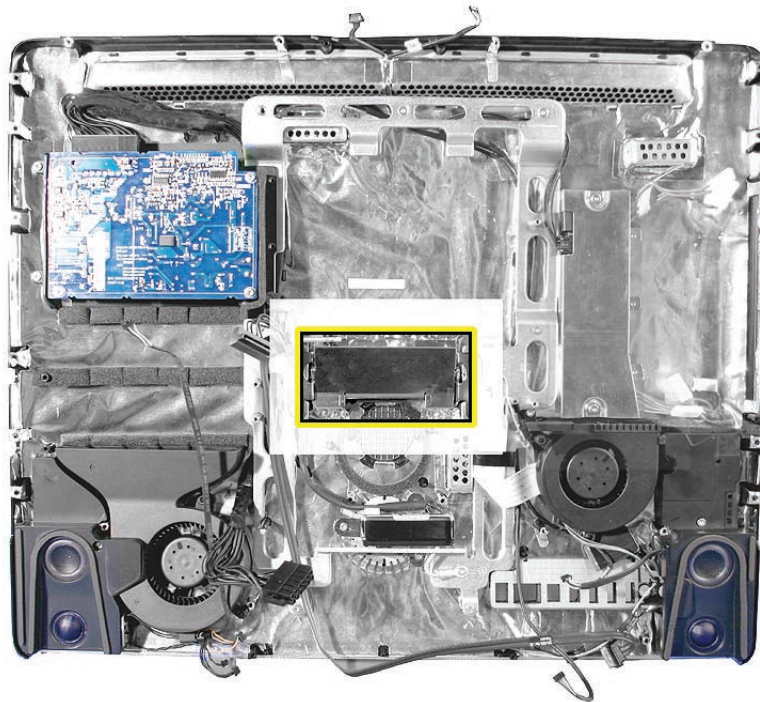
No tools are required for this procedure.

Preliminary Steps

Before you begin, remove the following:

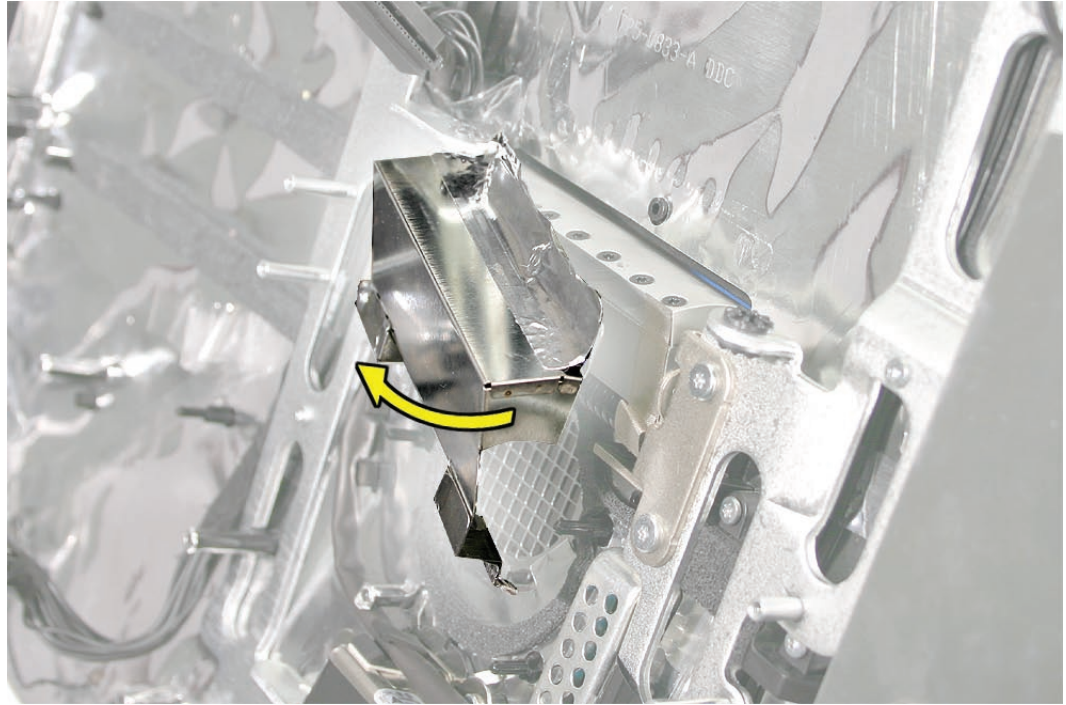
- [Access door](#)
- [Glass Panel](#)
- [Front bezel](#)
- [LCD display panel](#)
- [Speaker, right](#)
- [Logic board](#)
- [Hard drive](#)

Part Location



Removing the Clutch Cover

1. Peel up the EMI tape from the top, bottom, and sides of the clutch cover.
2. Lift the cover off of the clutch mechanism.



Replacing the Clutch Cover

1. Replace the metal clutch cover, and make sure the EMI tape holds the top, bottom, and sides of the cover onto the mechanism and rear cover.
2. [Replace the hard drive fan.](#)
3. [Replace the logic board.](#)
4. [Replace the right speaker.](#)
5. [Replace the display panel.](#)
6. [Replace the front bezel.](#)
7. [Clean and replace the glass panel.](#) **Note:** This step is very important. Follow the procedures to ensure the glass is clean and free of particles.
8. [Replace the access door.](#)



Clutch Mechanism

Tools

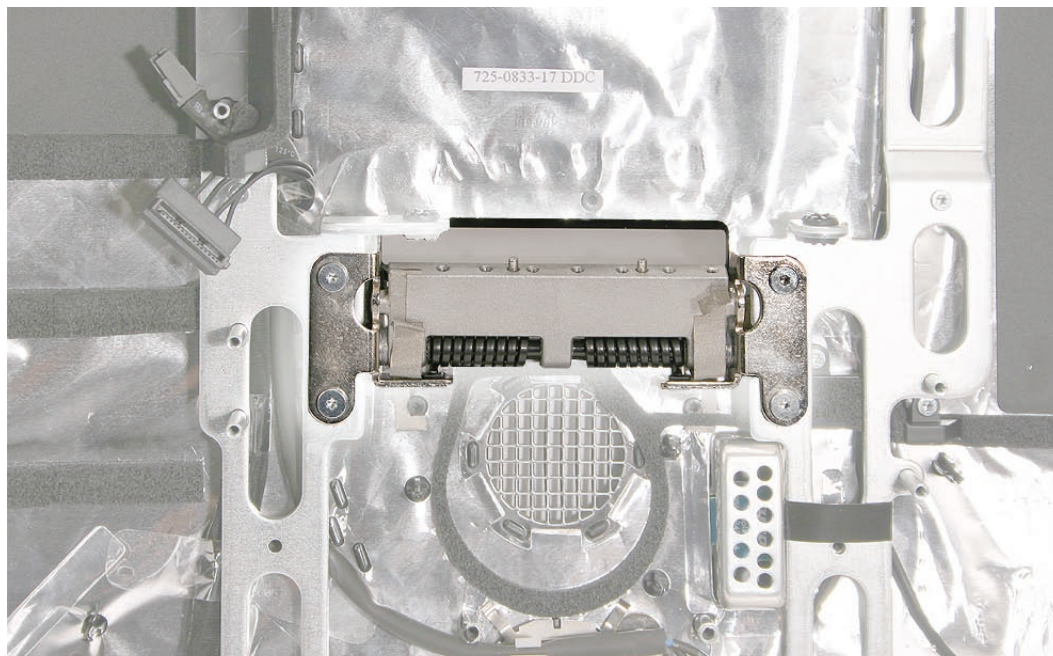
- Torx T10 screwdriver

Preliminary Steps

Before you begin, remove the following:

- [Access door](#)
- [Glass Panel](#)
- [Front bezel](#)
- [LCD display panel](#)
- [Speaker, right](#)
- [Power supply](#)
- [Logic board](#)
- [Hard drive fan](#)
- [Clutch cover](#)
- [Stand](#)

Part Location

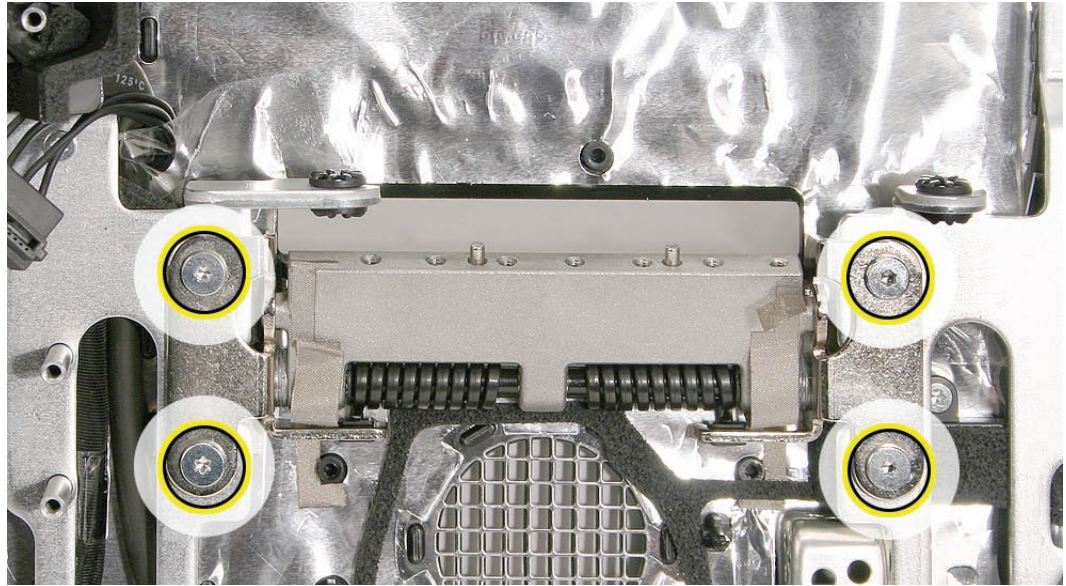


Removing the Clutch Mechanism

1. Using a Torx T10 screwdriver, remove the four clutch mounting screws.



922-7020



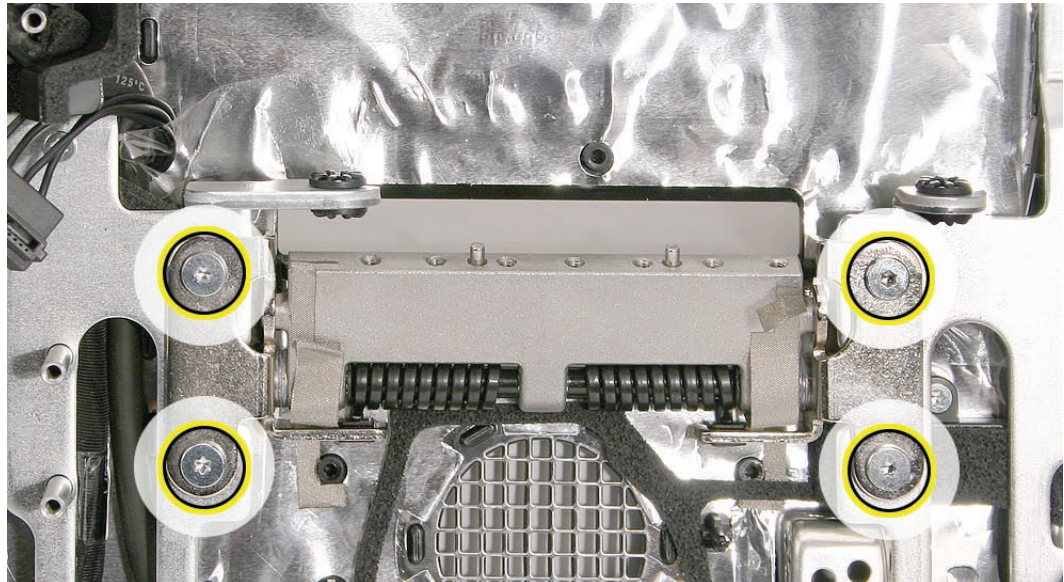
2. Peel back the mesh EMI tape on the mechanism.
3. Lift the clutch mechanism off the chassis and out of the rear housing.

Replacing the Clutch Mechanism

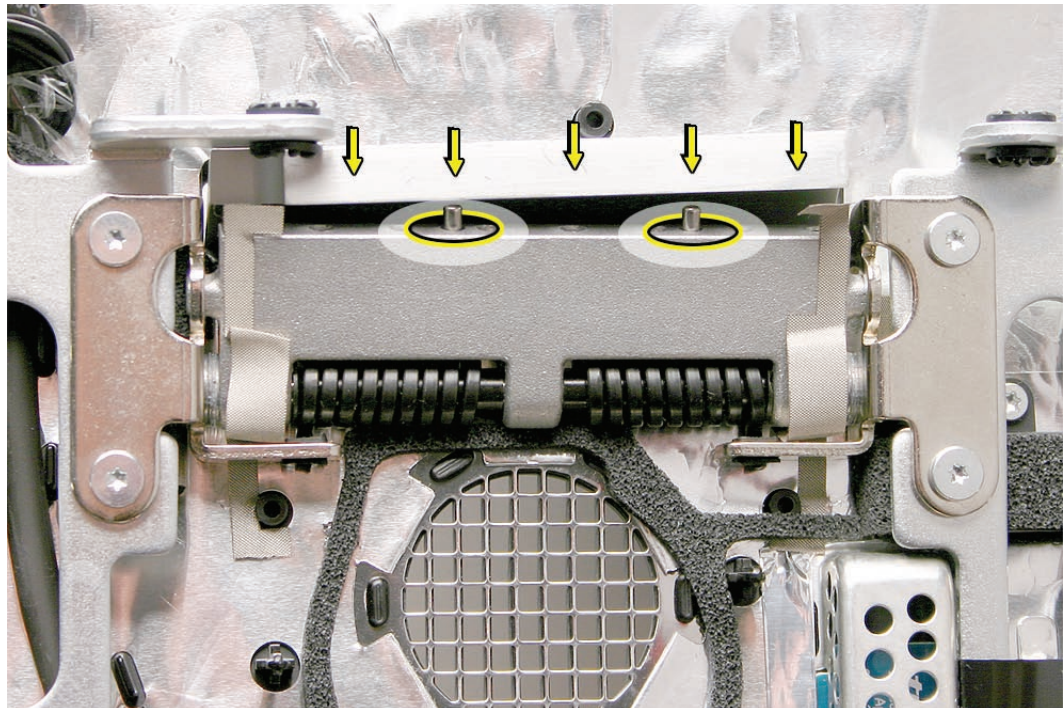
1. Adjust the clutch so that its chassis mounting holes align, and install the four screws that secure the clutch to the chassis.



922-7020



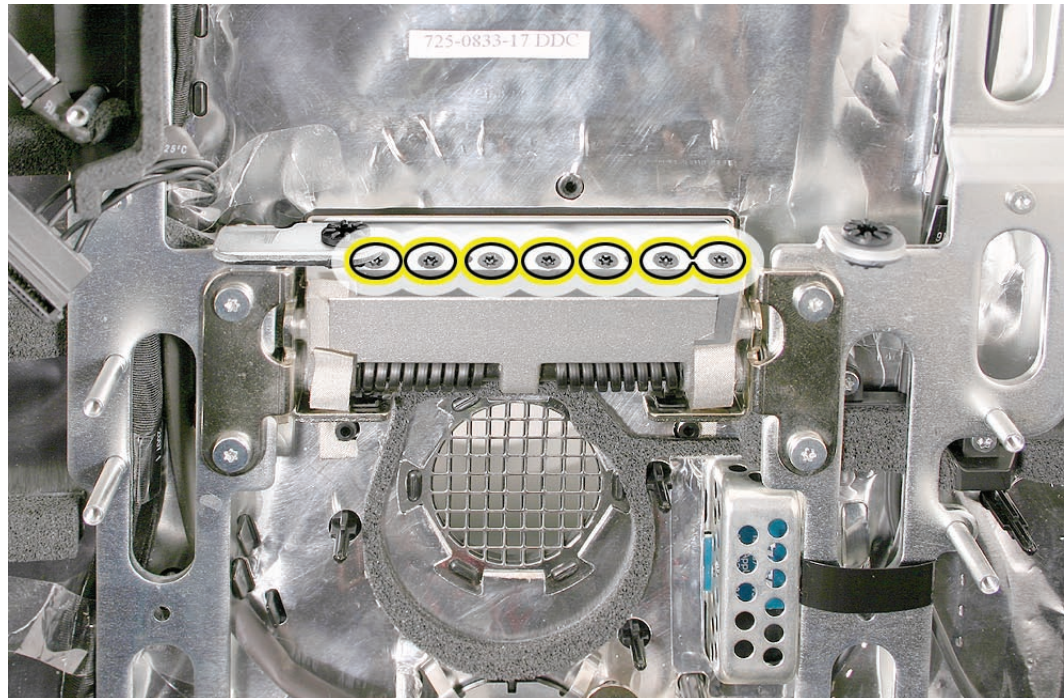
2. Replace the strips of EMI tape on each side of the mechanism, press it into place.
3. Locate the computer stand. Slide the top of the stand through the opening in the rear housing of the computer.
4. Align the pins on the clutch mechanism to the holes in the stand.



5. Install the seven clutch-to-stand mounting screws.



922-8209



6. [Replace the metal clutch cover.](#)
7. [Replace the hard drive fan.](#)
8. [Replace the hard drive.](#)
9. [Replace the logic board.](#)
10. [Replace the power supply.](#)
11. [Replace the right speaker.](#)
12. [Replace the display panel.](#)
13. [Replace the front bezel.](#)
14. [Clean and replace the glass panel.](#) **Note:** This step is very important. Follow the procedures to ensure the glass is clean and free of particles.
15. [Replace the access door.](#)



Cable, DC, Power Supply/ SATA/Inverter

Tools

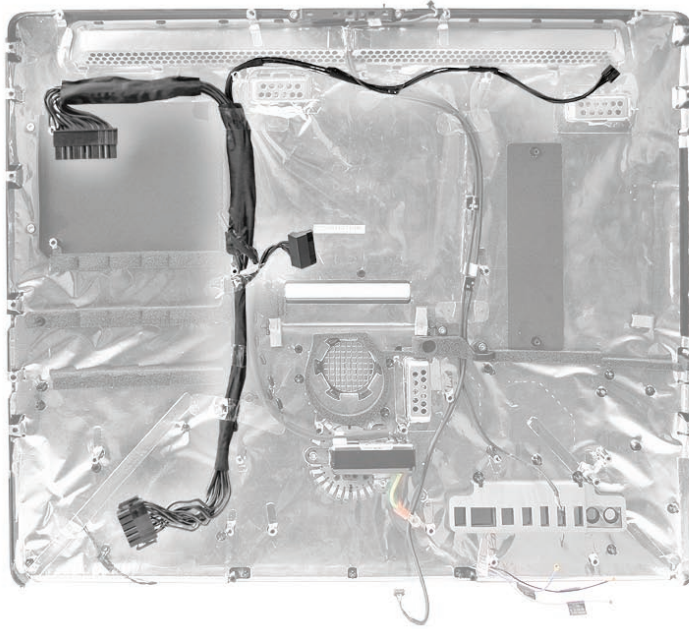
- Torx T10 screwdriver
- Torx T8 screwdriver

Preliminary Steps

Before you begin, remove the following:

- [Access door](#)
- [Glass panel](#)
- [Front bezel](#)
- [LCD display panel](#)
- [Speaker, right](#)
- [Speaker, left](#)
- [CPU fan](#)
- [Logic board](#)
- [Power supply](#)
- [Hard drive](#)
- [Hard drive SATA cable](#)
- [Optical drive](#)
- [Optical fan](#)
- [Disconnect Inverter cable](#)
- [Mechanism cover](#)
- [Hard drive fan](#)
- [Stand](#)

Part Location

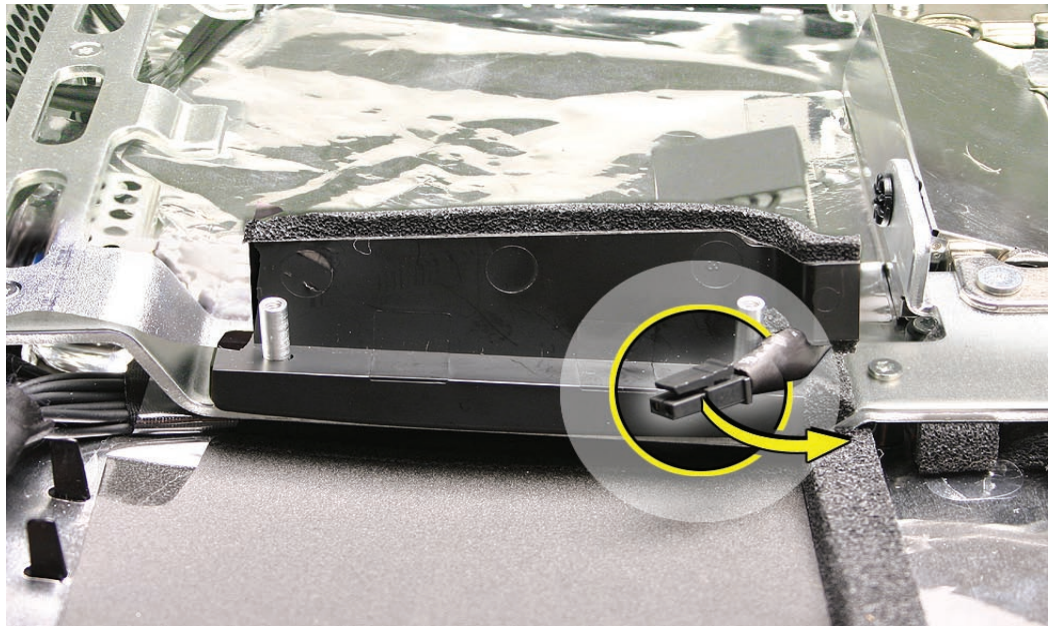


Removing the DC Power/SATA/Inverter Cable

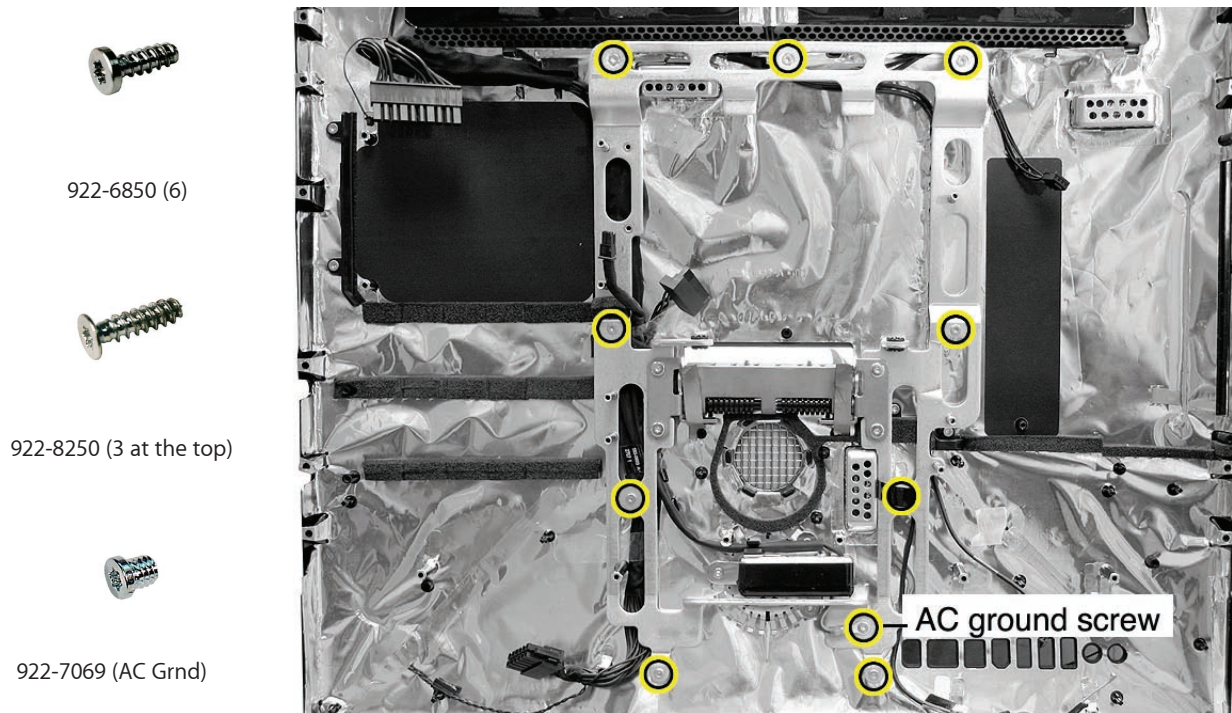
1. Tape the microphone cable to the top of the rear housing. This will keep the cable out of the way during the procedure.



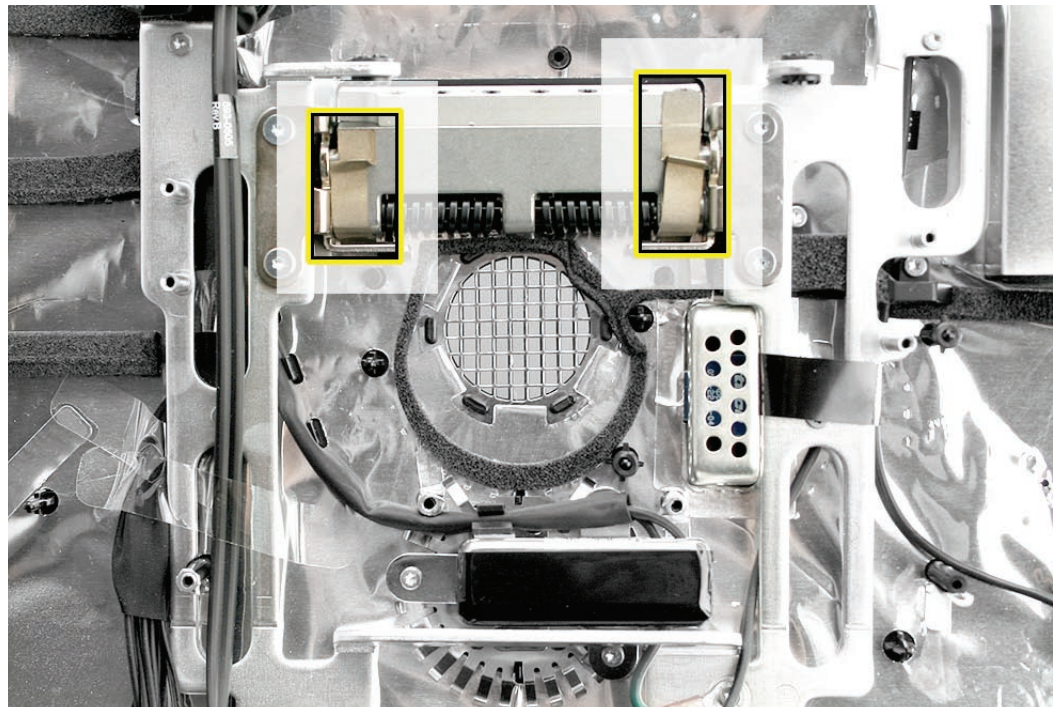
2. On the top left side of the chassis, pull the AC power inlet cable from under the pressure wall.



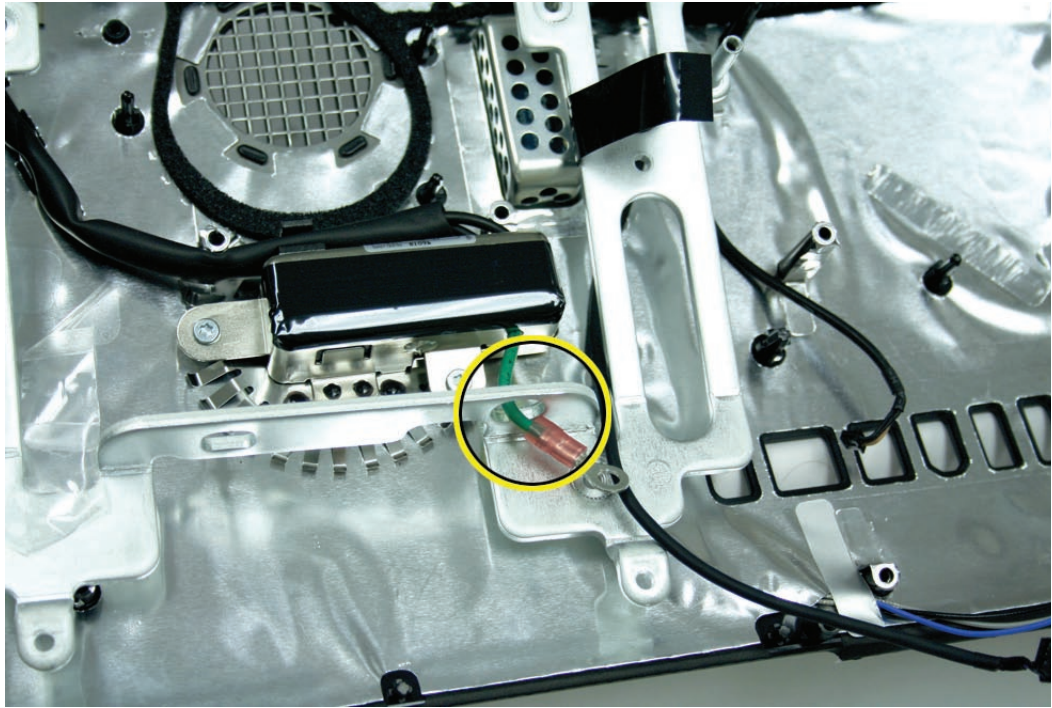
3. Remove the ten T10 chassis screws. One screw is under the black mylar tape that holds the optical cable in place. **Note:** The three screws along the top of the chassis have a flatter head than the other self tapping screw.



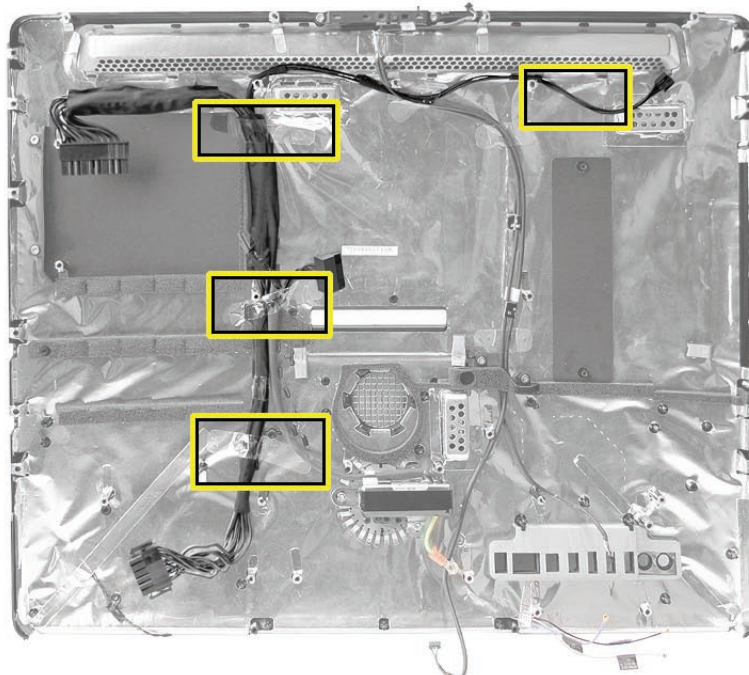
4. With a black stick or your fingernail, peel up the EMI tape attached to the rear housing so you can lift the chassis out of the rear housing.



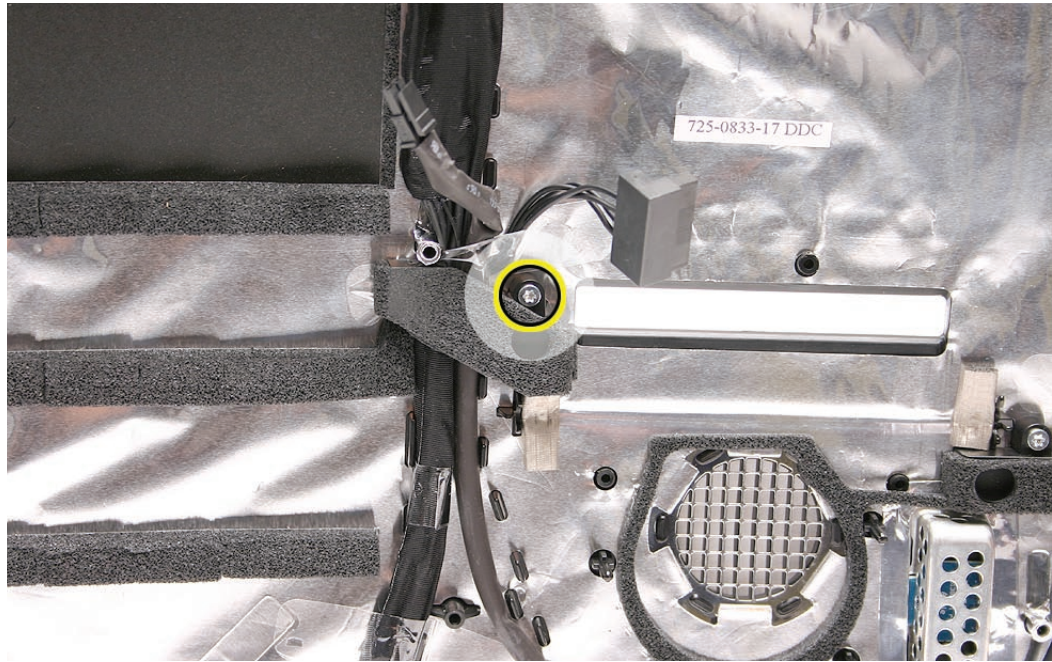
5. Remove the chassis from the rear housing. Pull the green ground cable through the opening in the chassis.



6. Remove any Kapton tape securing the cable to the rear housing.



7. Remove the T8 screw on the cable guide.

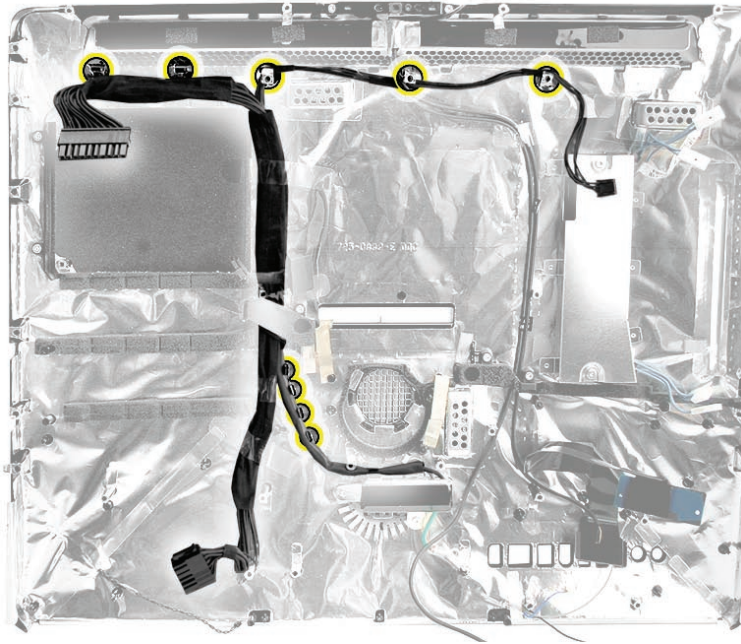


8. Before removing the cable, note how the cable routes between the black guide posts on the rear housing.

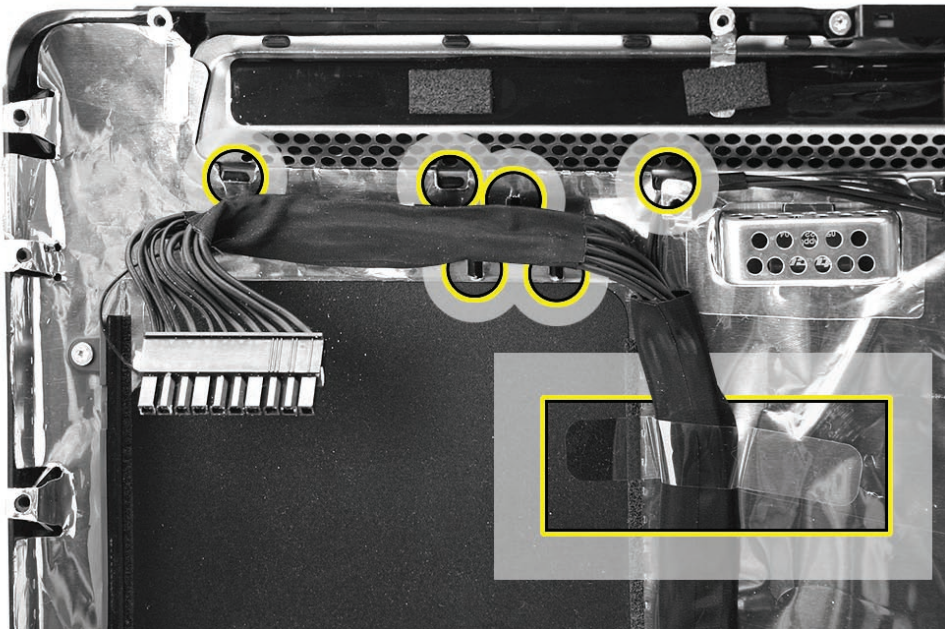


Replacing the DC Power/SATA/Inverter Cable

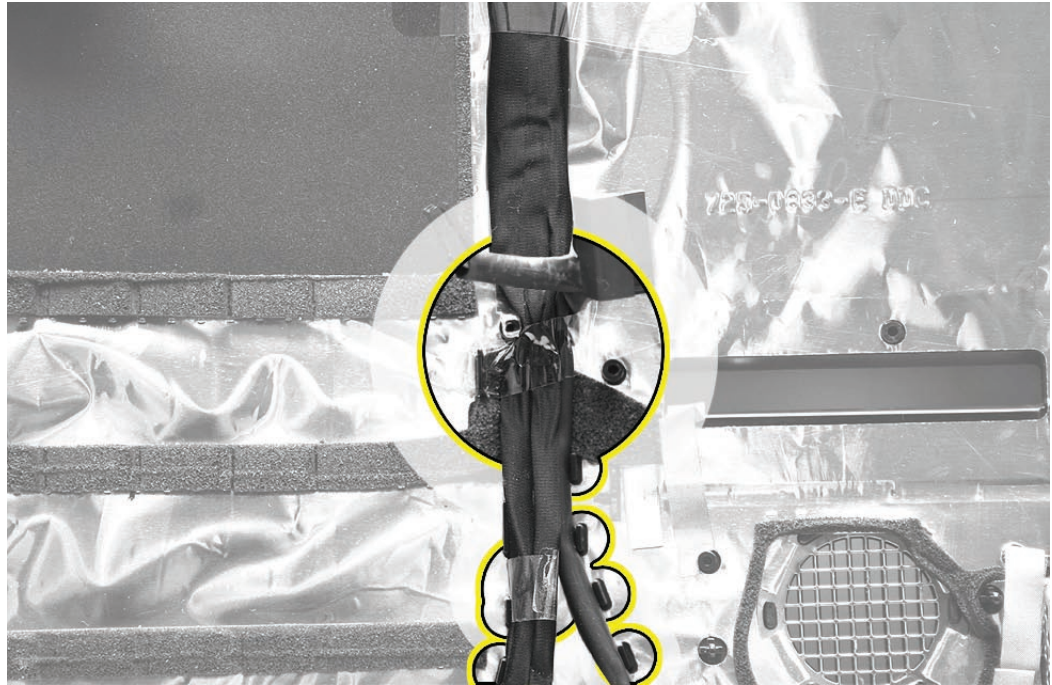
1. Install the DC power/SATA/inverter cable into the rear housing as shown below.



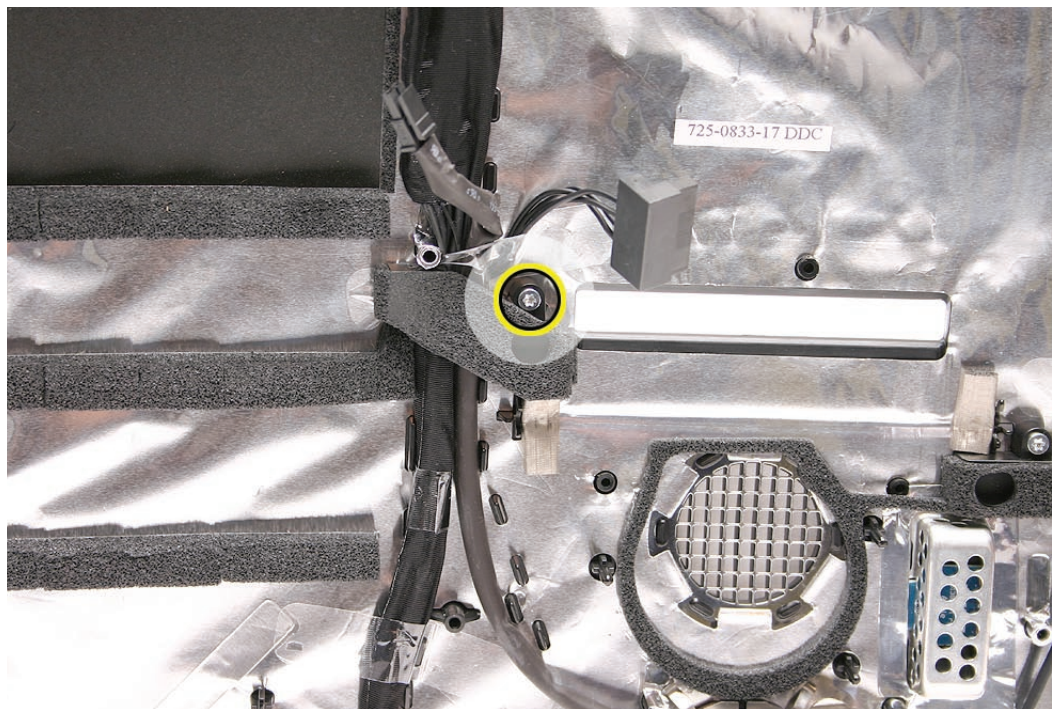
2. In the top left corner of the rear housing, position the cable between the black guide posts. Secure the cable in place with the clear Kapton tape. Route the inverter power cable off to the right, above the AirPort antenna can, [see step 6.](#)



3. In the middle of the rear housing, continue laying the cable between the black guide posts. Secure the cable with the Kapton tape .



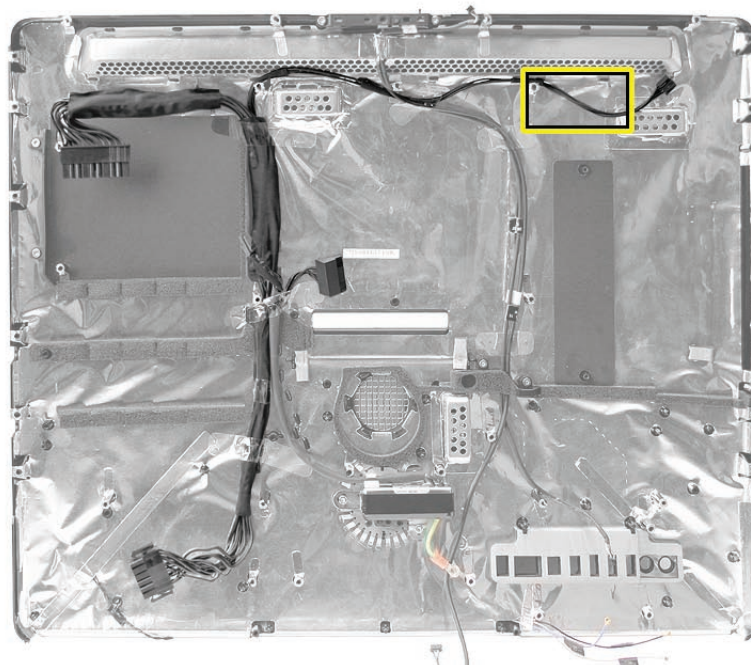
4. Position the plastic cable guide (with foam) over the cable. Replace the T8 screw. **Note:** Make sure the cable guide is flush with the rear housing. If the cable guide is not seating properly, make sure the cable is situated properly between the black guide posts.



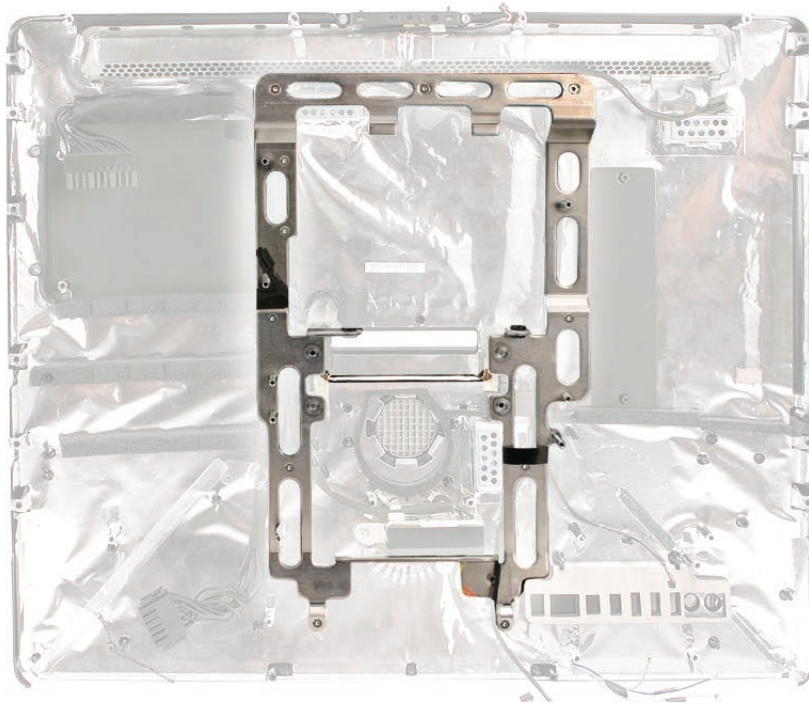
5. Toward the bottom of the rear housing, continue laying the cable between the black guide posts. Secure the cable with the Kapton tape. **Note:** The AC inlet cable should be positioned in between the guide posts as well. The AC cable does not need to be removed for this procedure.



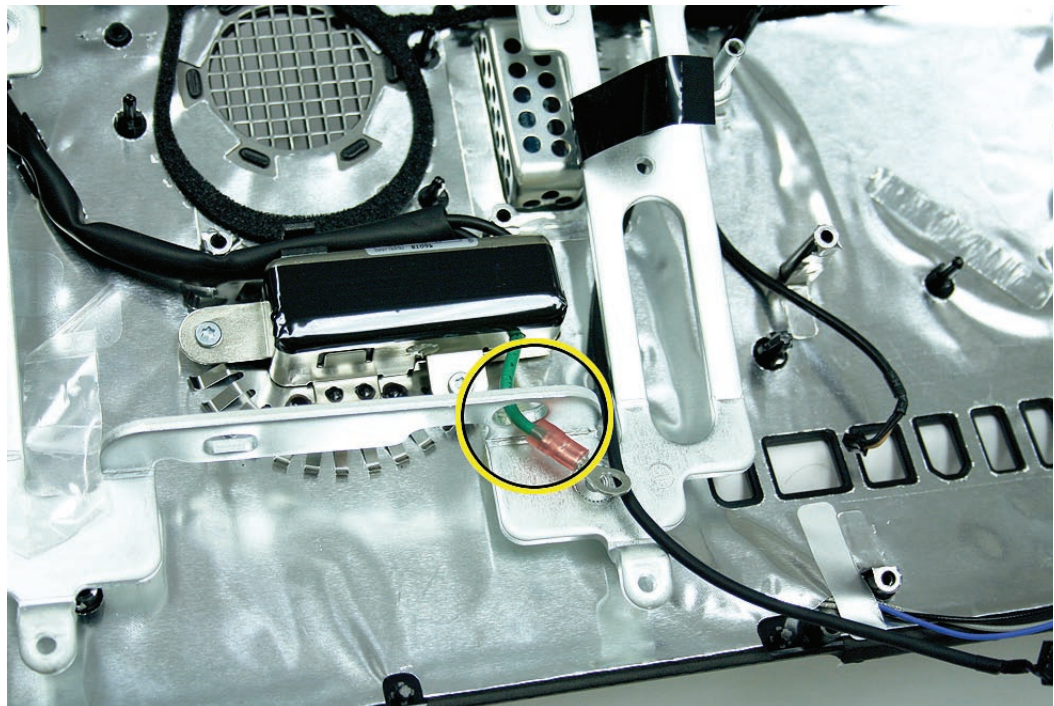
6. Replace the Kapton tape securing the inverter cable to the rear housing.



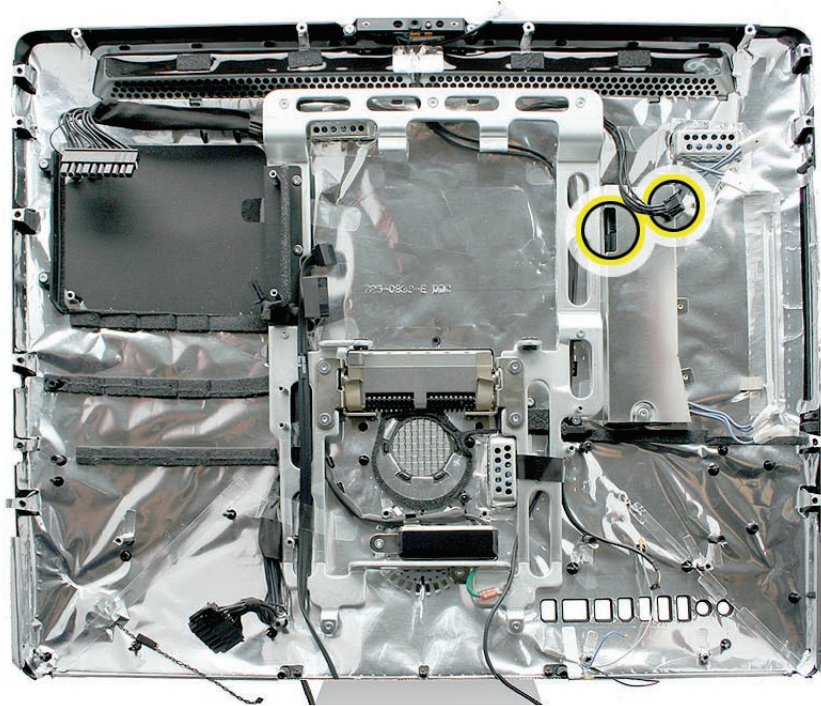
7. Position the chassis into the rear housing.



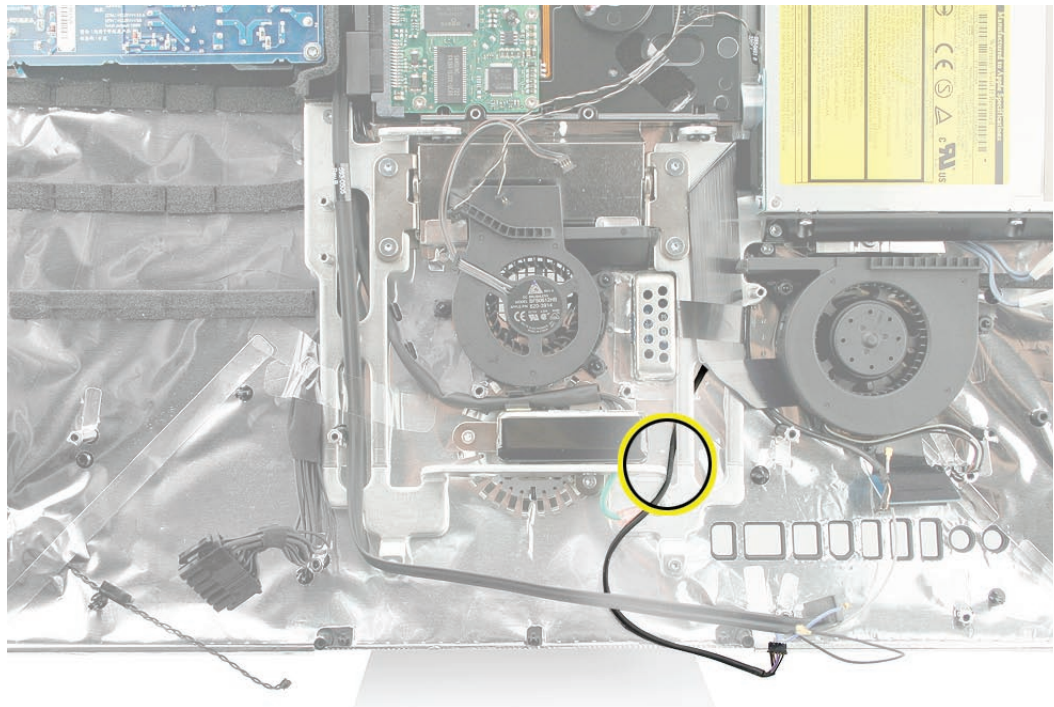
8. Pull the AC ground wire through the hole in the chassis.



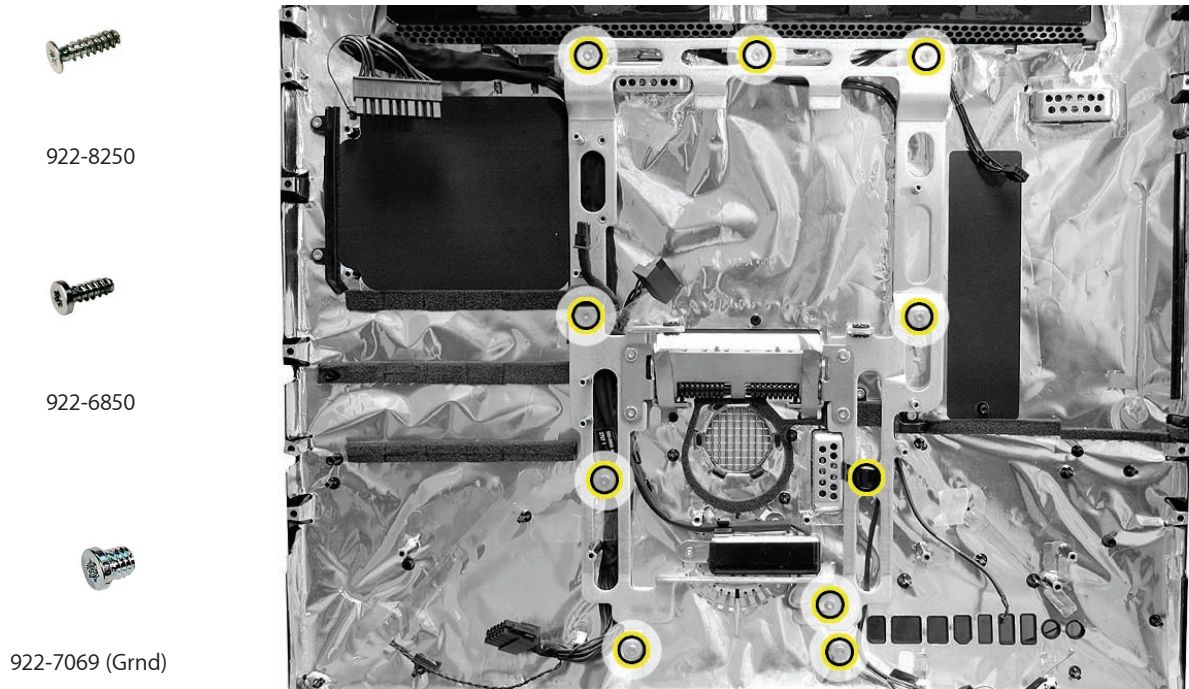
9. Connect the inverter cable to the inverter.



10. Route the microphone cable under the chassis up to the AC power inlet, then route it up through the chassis so it rests in the notch next to the AC ground wire.



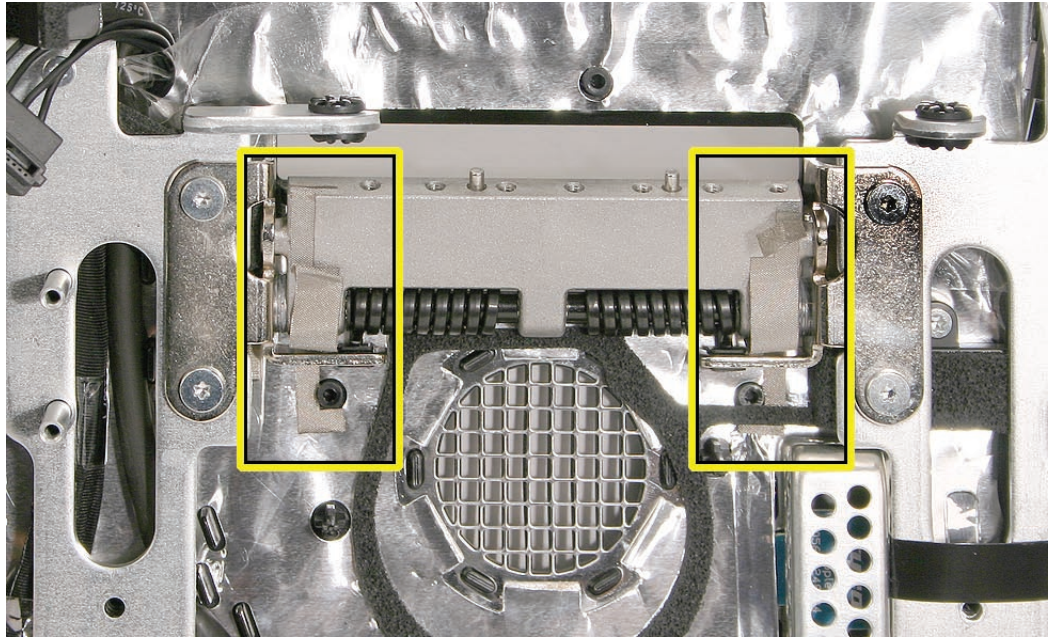
11. Replace the ten chassis screws. Begin with the three screws along the top (922-8250), then replace the remaining six self-tapping screws (922-6850) followed by the short AC ground screw.



12. Slip the AC inlet cable back under the pressure wall.



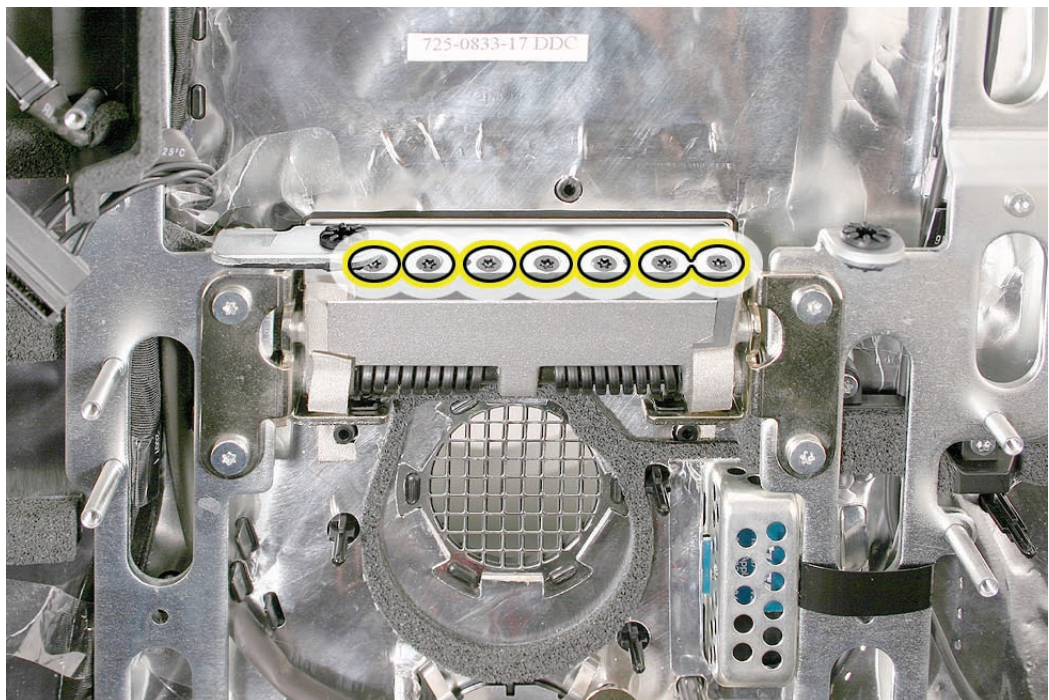
13. Re-stick the EMI tape onto the mechanism and rear housing.



14. Replace the stand and the seven screws.



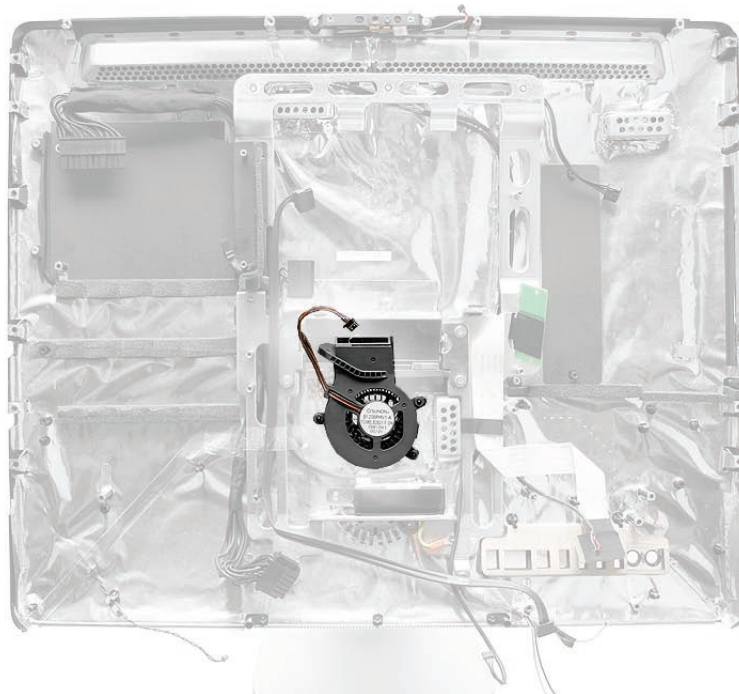
922-8209



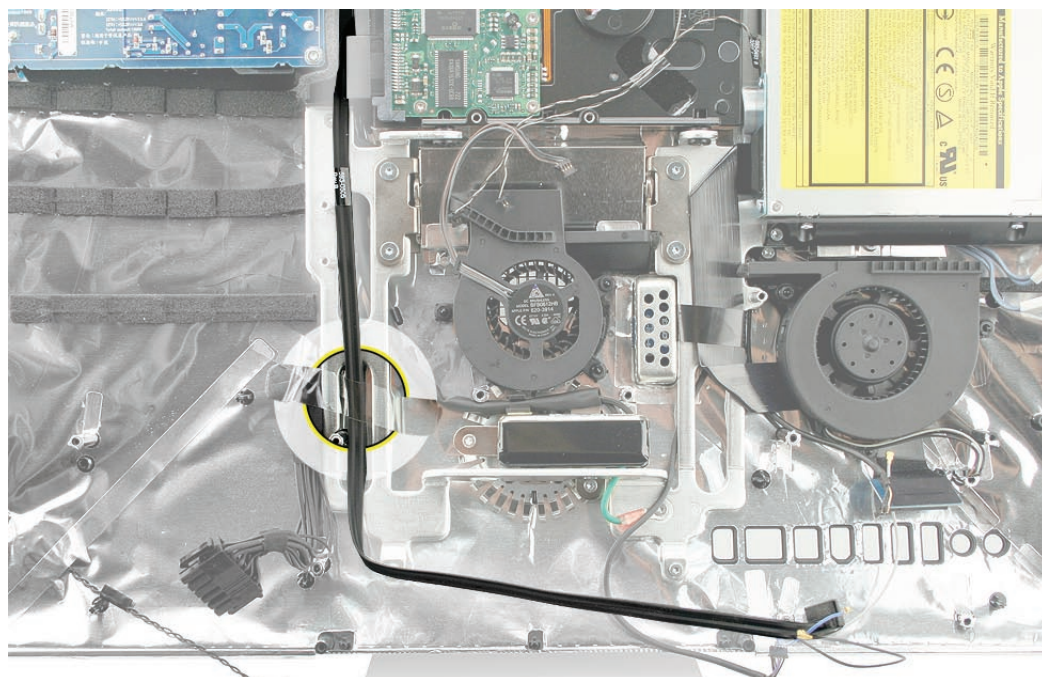
-
15. Replace the mechanism cover. Re-stick the EMI foil as best you can to the rear housing.



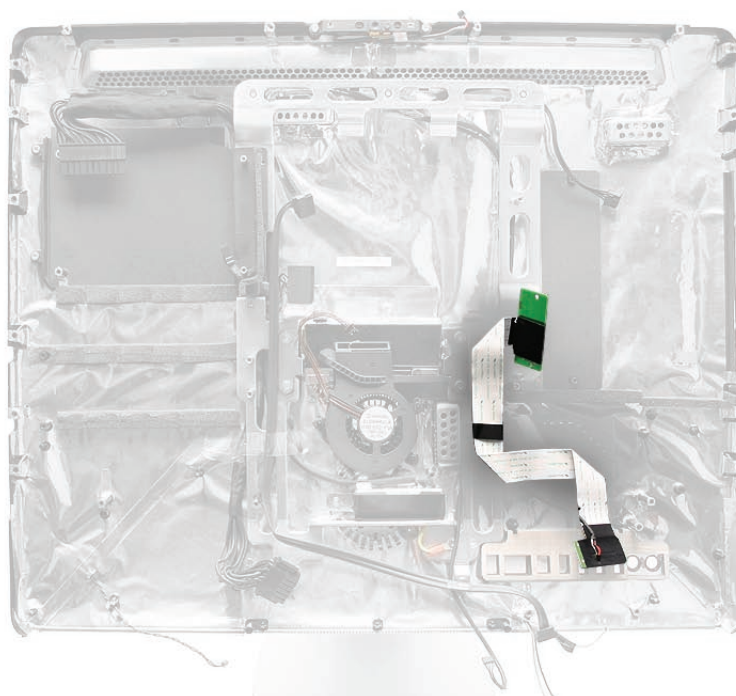
16. Replace the hard drive fan.



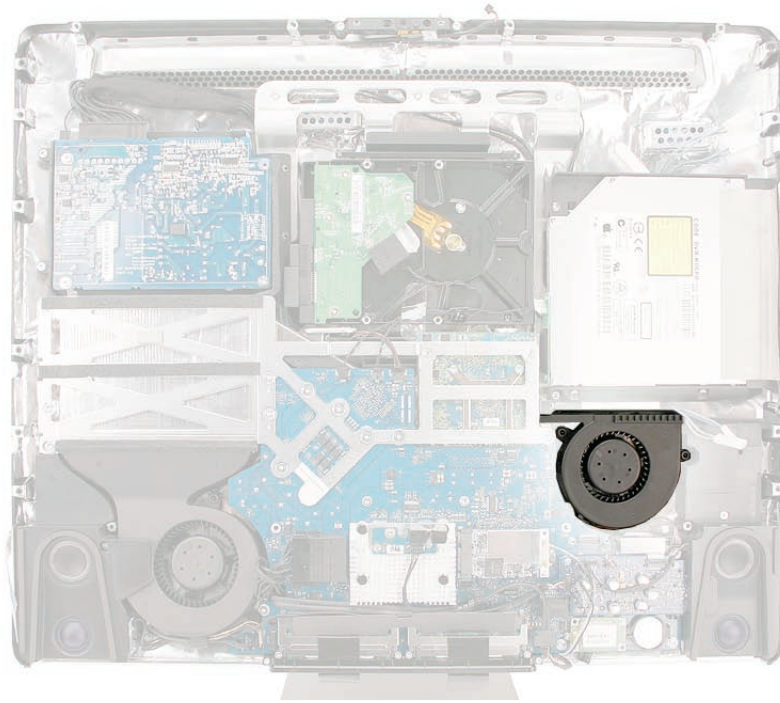
-
17. Position the hard drive data cable on top of the chassis. Secure the cable with Kapton tape.



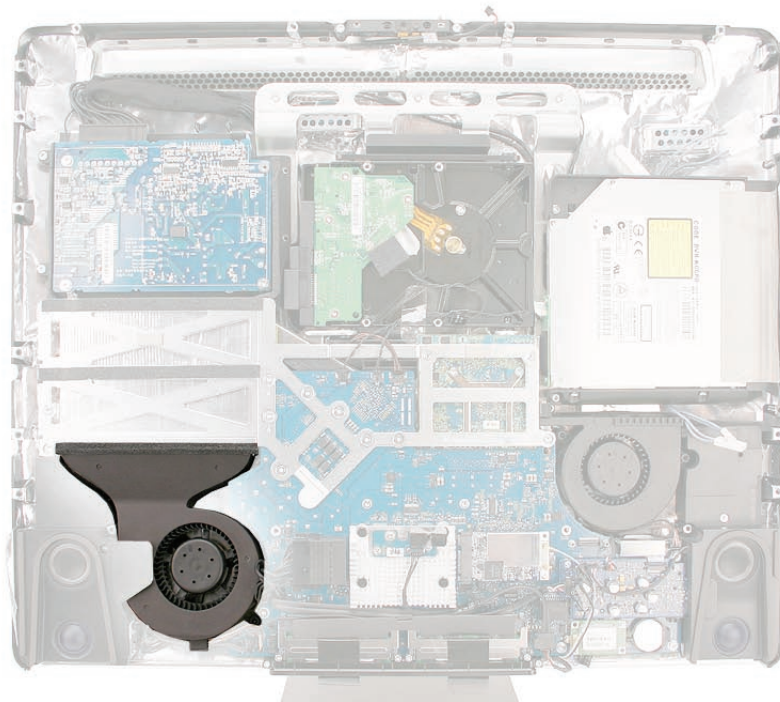
18. [Replace the hard drive.](#)
19. Replace the optical drive flex cable if it was removed.



20. Replace the optical fan.



21. Replace the CPU fan.



-
22. [Replace the optical drive.](#)
 23. [Replace the logic board.](#)
 24. [Replace the right speaker.](#)
 25. [Replace the left speaker.](#)
 26. [Replace the power supply](#)
 27. [Replace the display panel.](#)
 28. [Replace the front bezel and connect the microphone cable.](#)
 29. [Clean and replace the glass panel.](#) **Note:** This step is very important. Follow the procedures to ensure the glass is clean and free of particles.
 30. [Replace the access door.](#)
 31. Run diagnostics. If Apple Hardware Test comes up with an error, refer to the [Apple Hardware Test error code chart](#) in the Troubleshooting chapter.
 32. Check all cable and sensor connections and test again.



Rear Cover

Tools

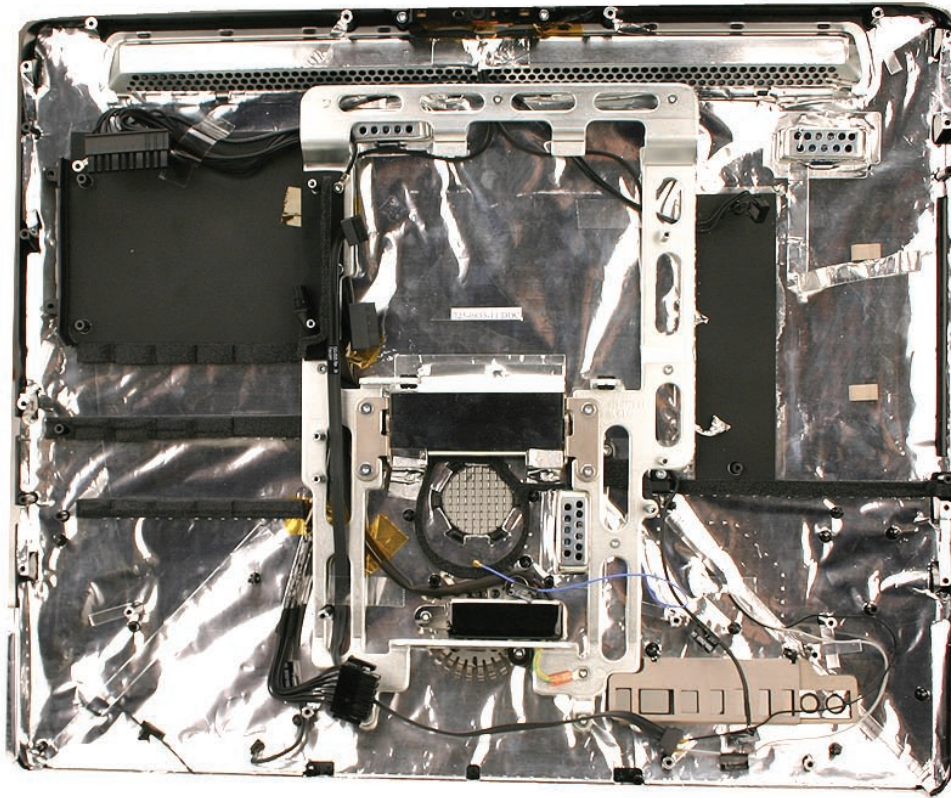
No tools are required to remove the rear cover.

Preliminary Steps

Before you begin, remove the following: (LINKS NOT WORKING)

- [Access door](#)
- [Glass Panel](#)
- [Front bezel](#)
- [LCD display panel](#)
- [Speaker, right](#)
- [Speaker, left](#)
- [CPU fan](#)
- [Logic board](#)
- [Power Supply](#)
- [Hard drive](#)
- [Hard drive fan](#)
- [Hard drive SATA cable](#)
- [Optical drive](#)
- [Optical fan](#)
- [Optical flex cable](#)
- [Inverter](#)
- [Mechanism cover](#)
- [Stand](#)
- [Mechanism](#)

Part Location



Removing the Rear Cover

With all of the preliminary steps performed, the rear cover is the remaining assembly. Note: the photo above happens to show the chassis on the rear housing. The rear housing does not include the chassis.

A replacement rear cover includes:

- EMI shielding
- Bluetooth antenna
- AirPort antennas
- Power supply cable
- Hard drive data cable
- Camera and microphone cable
- Power button cable
- AC inlet
- Gaskets
- Power supply pressure walls, left and right

Replacing the Rear Cover

1. [Replace the mechanism.](#)
2. [Replace the stand.](#)
3. [Replace the mechanism cover.](#)
4. [Replace the optical flex cable.](#)
5. [Replace the hard drive fan.](#)
6. [Replace the optical fan.](#)
7. [Replace the cpu fan.](#)
8. [Replace the logic board.](#)
9. [Replace the left speaker.](#)
10. [Replace the right speaker.](#)
11. [Replace the optical drive.](#)
12. [Replace the hard drive.](#)
13. [Replace the power supply.](#)
14. [Replace the display panel.](#)
15. [Replace the front bezel.](#)
16. [Replace the glass panel](#)
17. [Replace the memory access door.](#)



Stand

Tools

- Torx T10 screwdriver
- Soft, clean cloth

Preliminary Steps

Before you begin, remove the following:

- [Access door](#)
- [Glass Panel](#)
- [Front bezel](#)
- [LCD display panel](#)
- [Speaker, right](#)
- [Logic board](#)
- [Hard drive](#)
- [Hard drive fan](#)
- [Mechanism cover](#)

Part Location

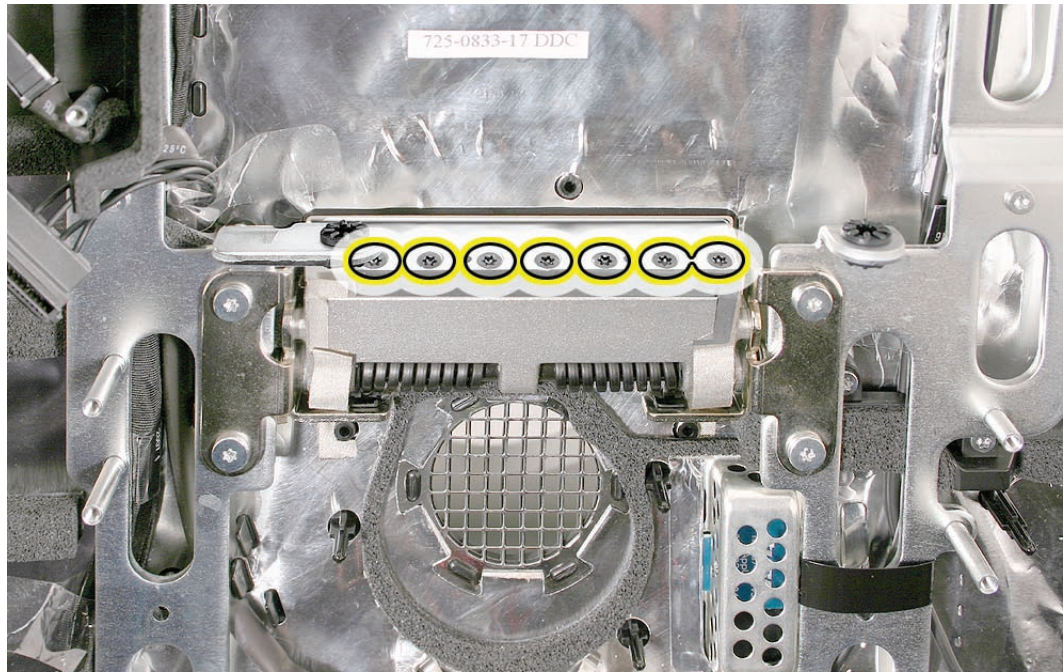


Removing the Stand

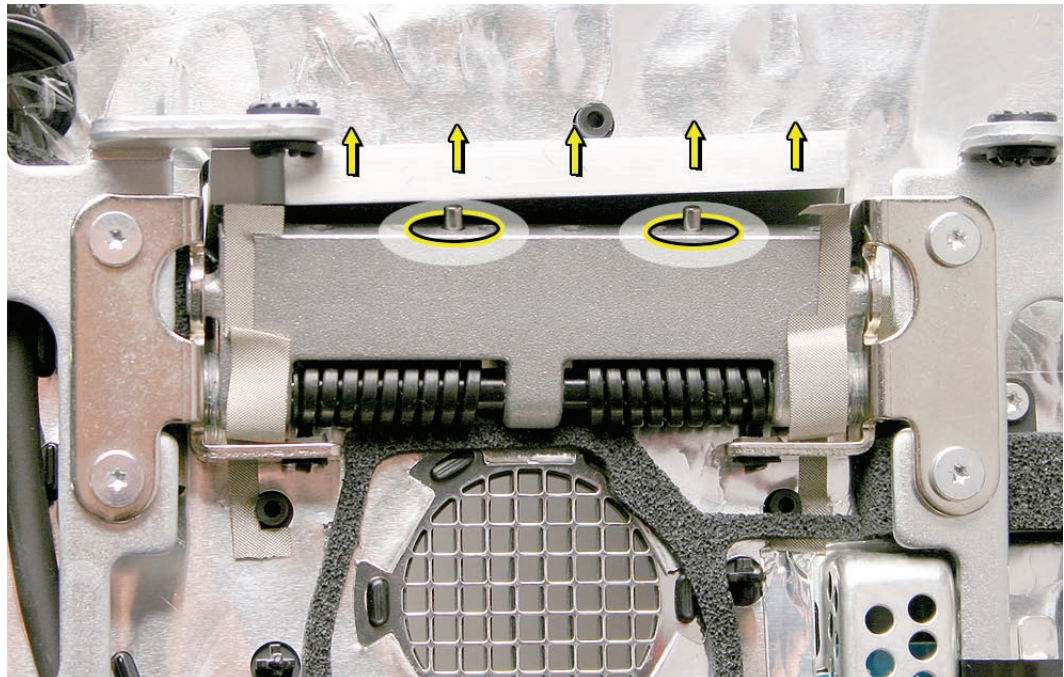
1. Remove the seven T10 clutch-to-stand screws.



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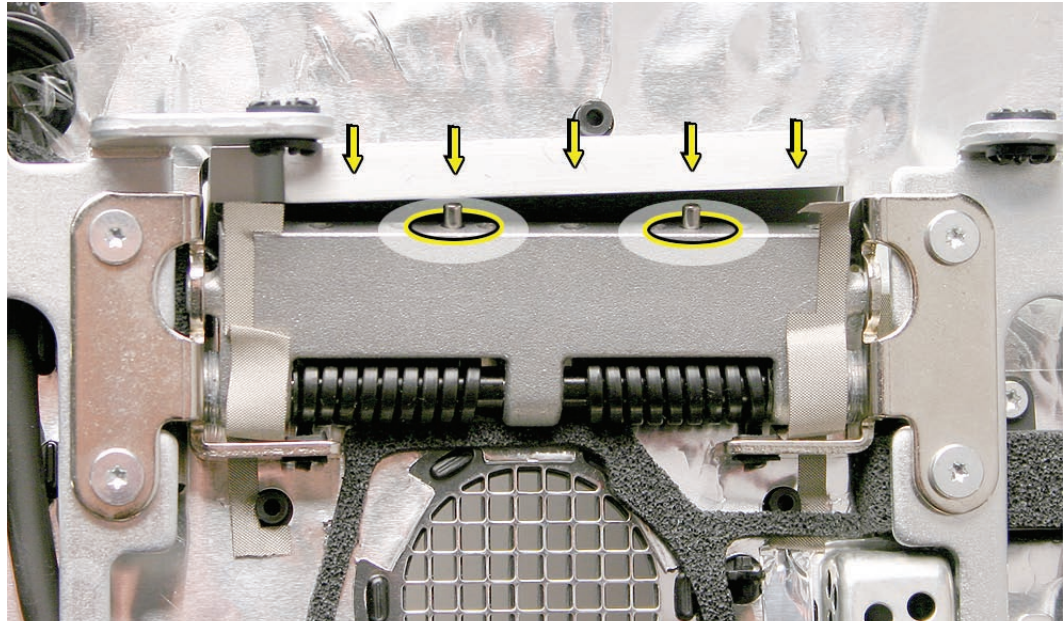


2. Lift the stand off the two pins on the mechanism. Carefully separate the stand from the clutch mechanism and rear housing.



Replacing the Stand

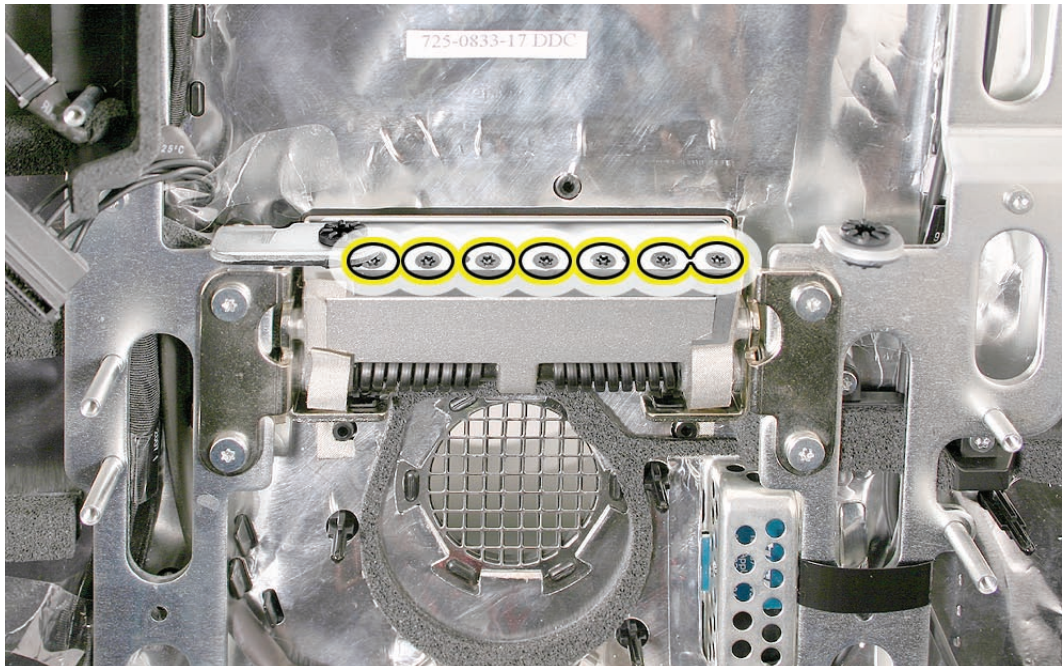
1. Align the pins on the clutch mechanism to the holes in the stand.



2. Replace the stand screws.



922-8209



3. [Replace the chassis.](#)
4. [Replace the hard drive fan.](#)
5. [Replace the power supply.](#)

-
6. [Replace the hard drive.](#)
 7. [Replace the logic board.](#)
 8. [Replace the right speaker.](#)
 9. [Replace the display panel.](#)
 10. [Replace the front bezel.](#)
 11. [Clean and replace the glass panel.](#) **Note:** This step is very important. Follow the procedures to ensure the glass is clean and free of particles.
 12. [Replace the access door.](#)



Chassis

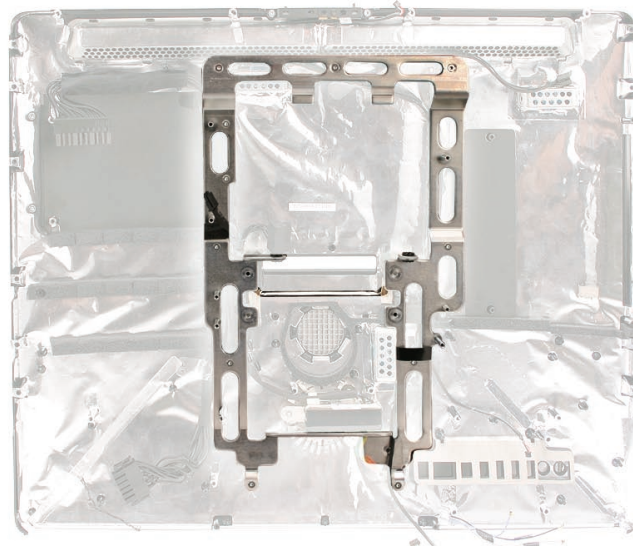
Tools

- Torx T10 screwdriver

Preliminary Steps

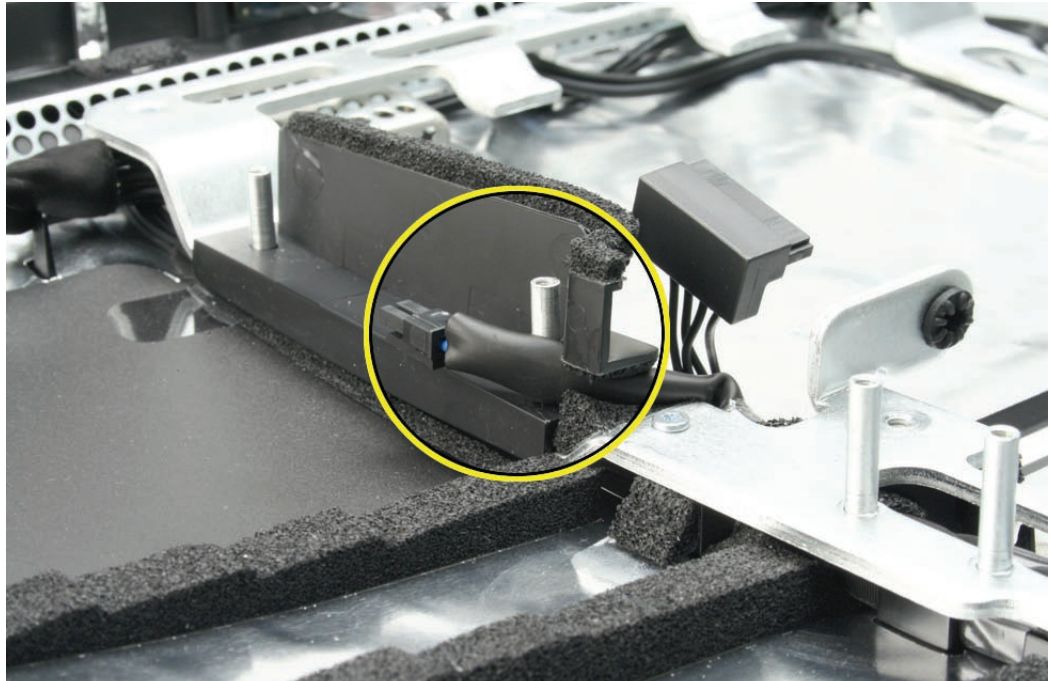
- [Access door](#)
- [Glass Panel](#)
- [Front bezel](#)
- [LCD display panel](#)
- [Speaker, right](#)
- [Speaker, left](#)
- [CPU fan](#)
- [Logic board](#)
- [Power Supply](#)
- [Hard drive](#)
- [Hard drive fan](#)
- [Hard drive SATA cable](#)
- [Optical drive](#)
- [Optical fan](#)
- [Optical flex cable](#)
- [Mechanism cover](#)
- [Stand](#)
- [Mechanism](#)

Part Location

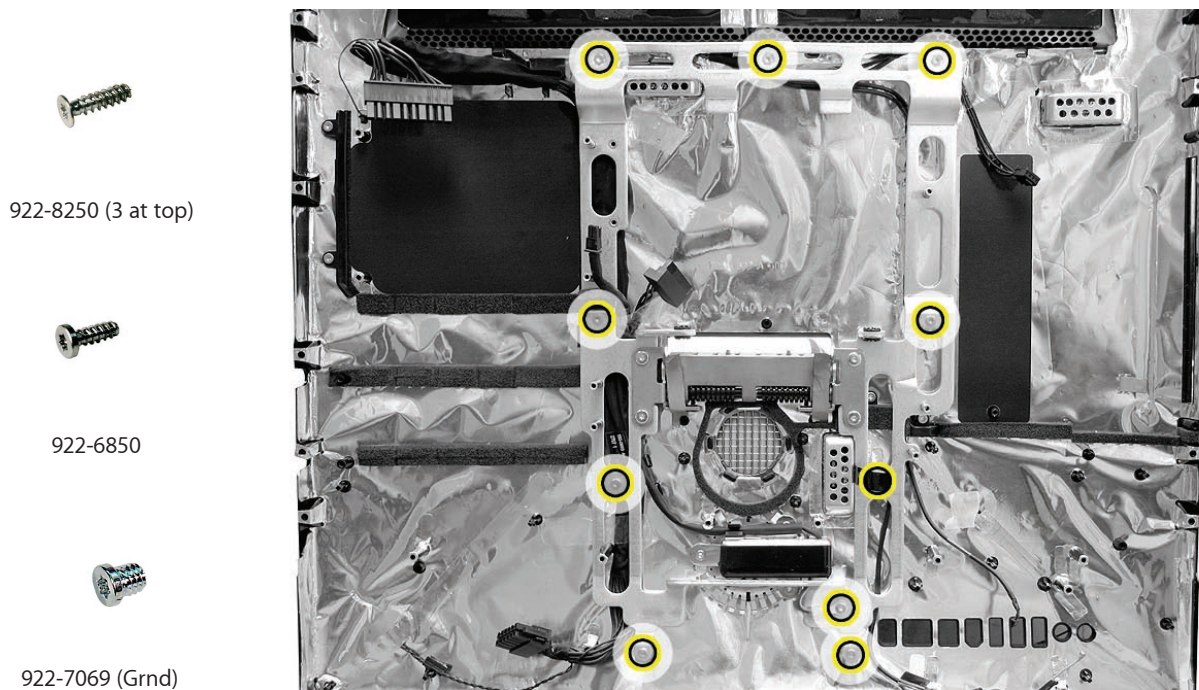


Removing the Chassis

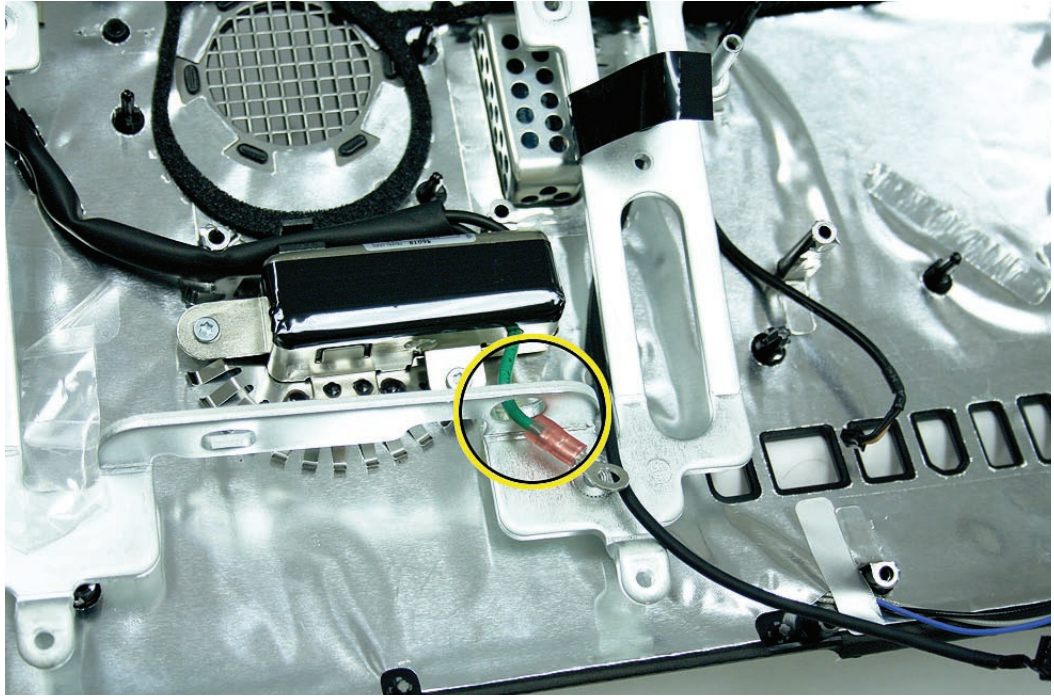
1. Slide the AC connector out from under the pressure wall. The pressure wall does not have to be removed.



2. Remove ten chassis screws. Note: The three screws across the top are a longer flat-head T10 screw and there is one short stubby screw for the ground cable.



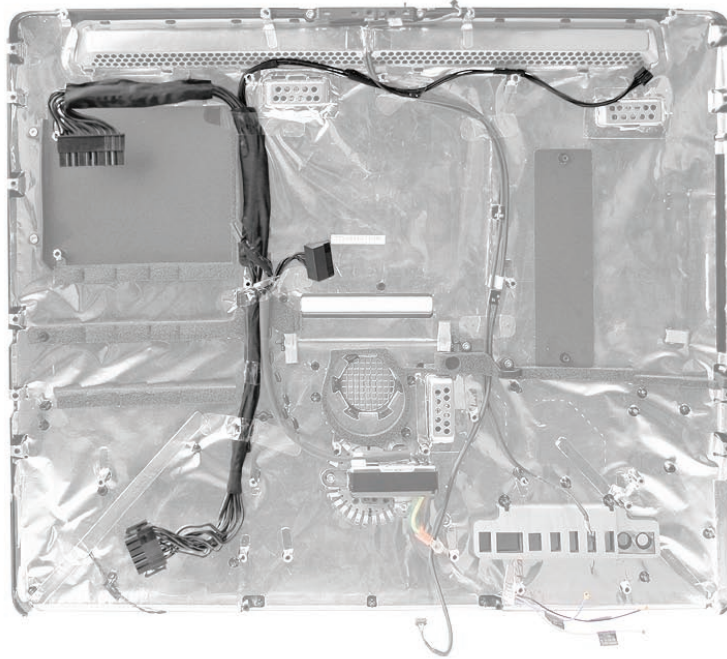
3. Pull the green ground cable through the opening in the chassis.



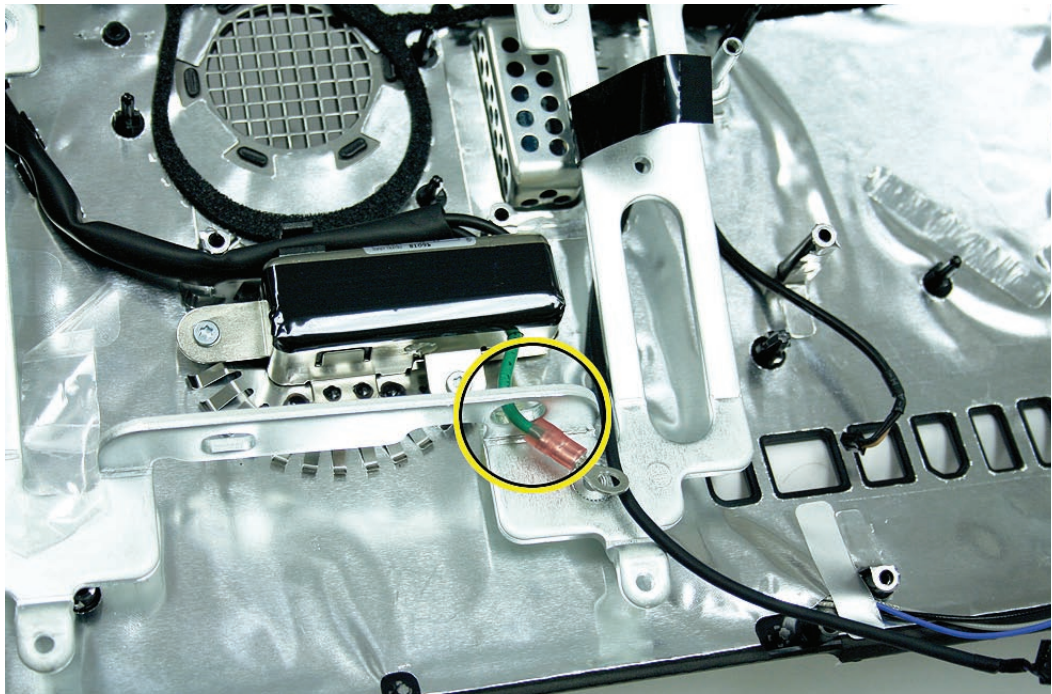
4. Lift the chassis out of the rear housing.

Replacing the Chassis

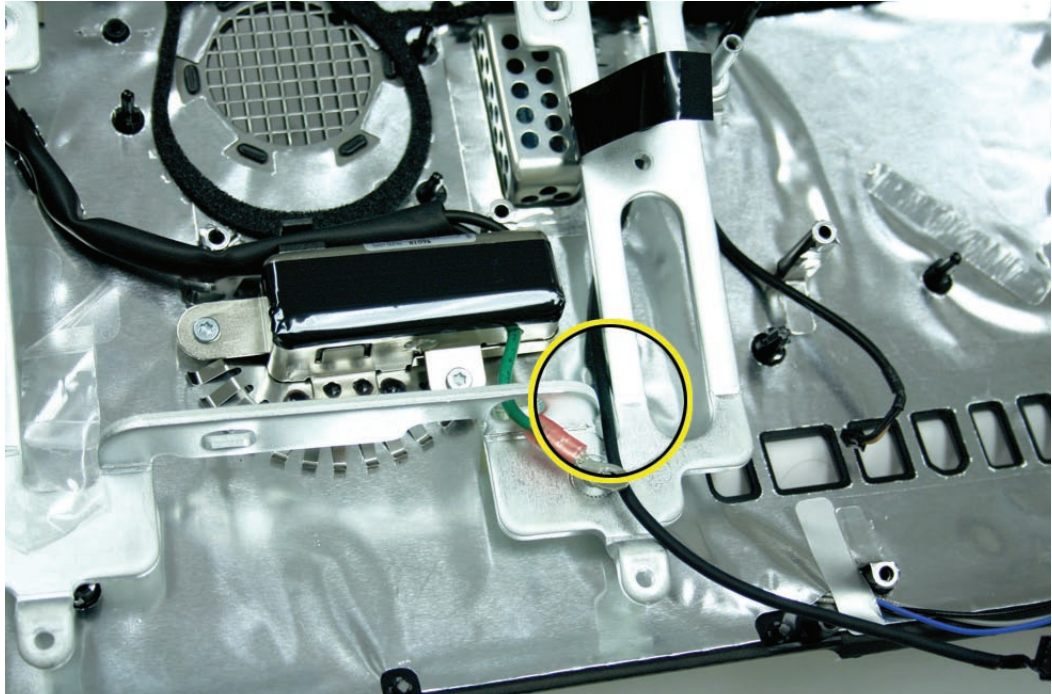
1. Make sure the DC power supply/ SATA/inverter cable is routed properly in the rear housing before replacing the chassis. Position the cable between the black tabs on the rear housing.



2. Position the chassis into the rear housing.
3. Pull the AC ground wire through the hole in the chassis.



4. Make sure the microphone cable is pulled up and through the notch in the chassis.



5. Begin with the three screws along the top, then replace the remaining chassis screws, including the short AC ground screw.
- 6.



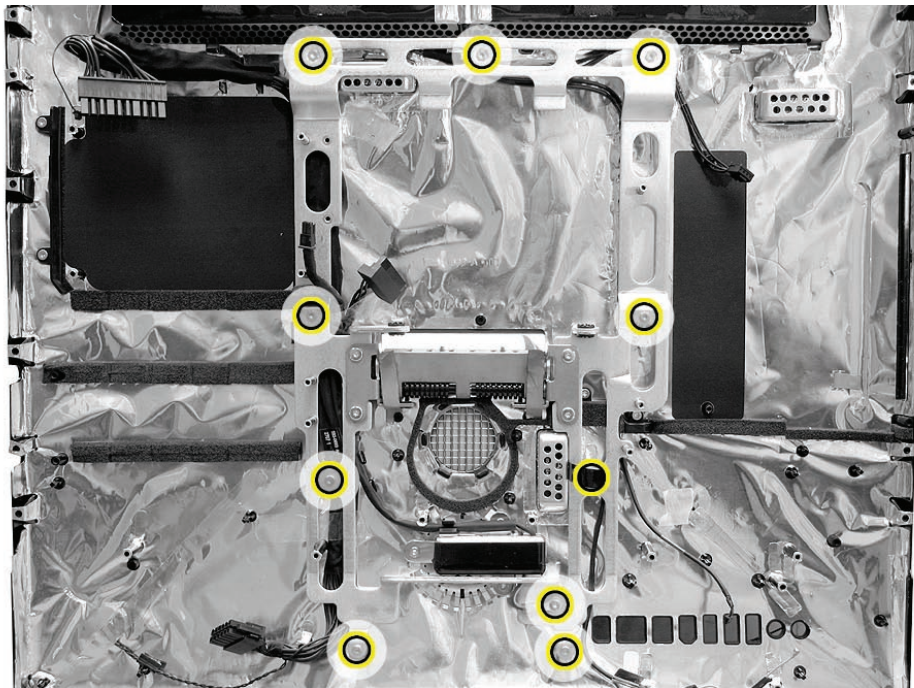
922-8250



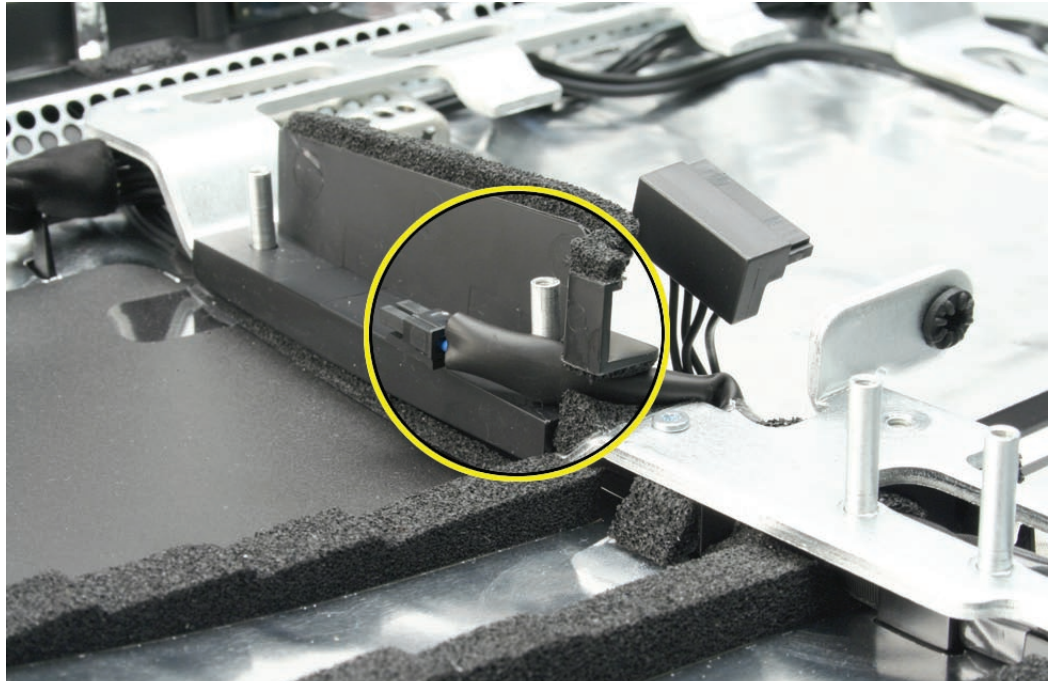
922-6850



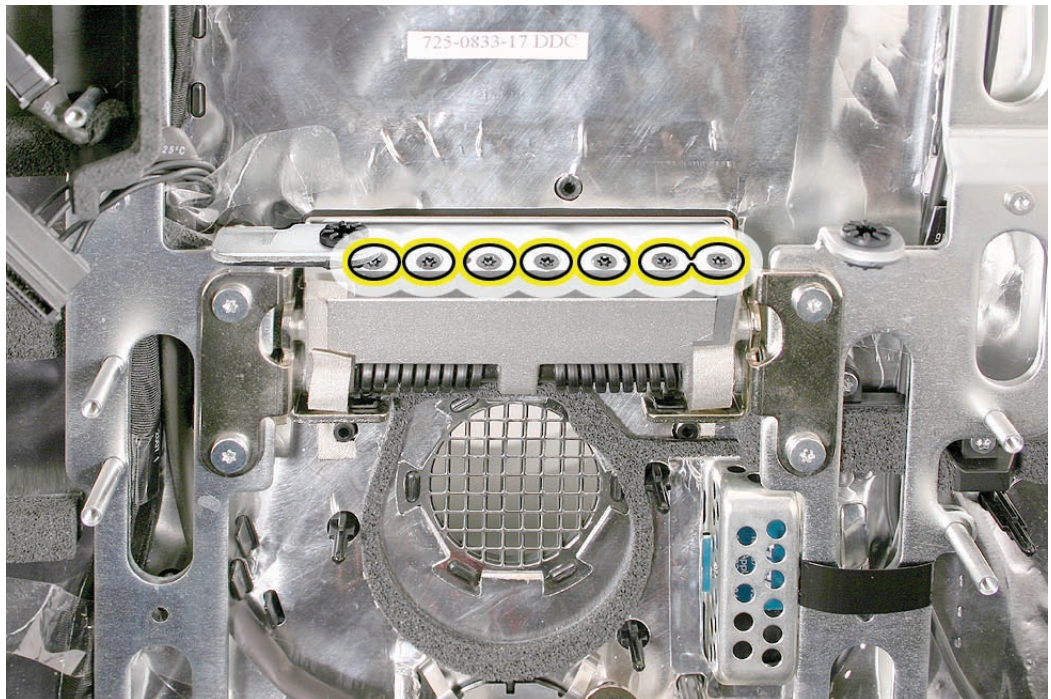
922-7069 (Grnd)



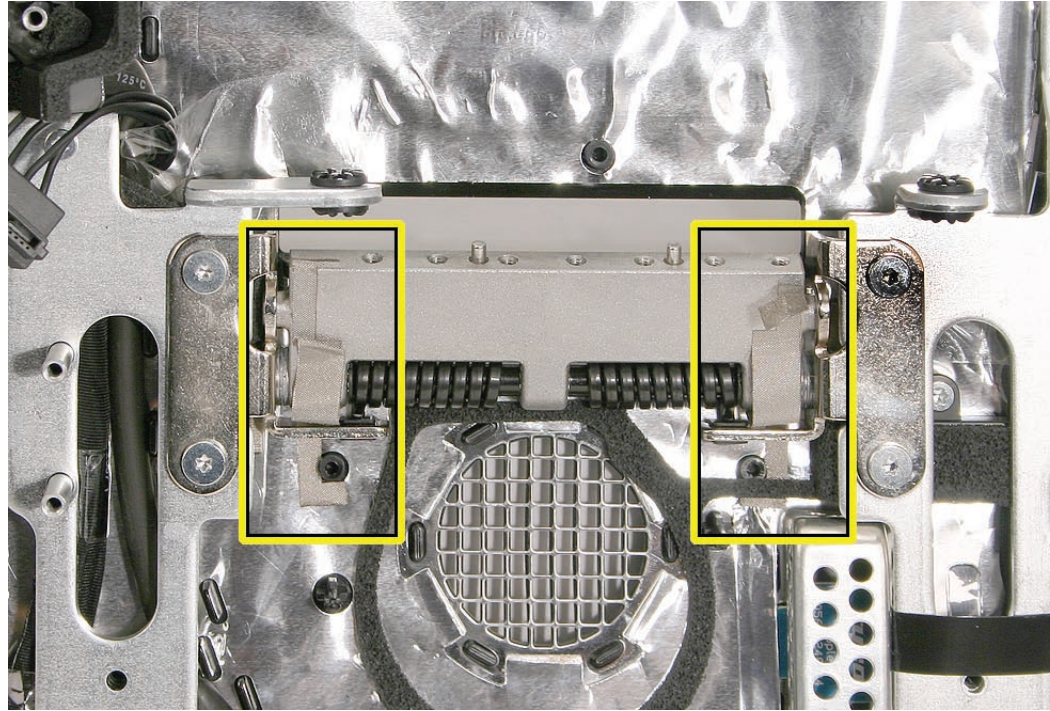
7. Slip the AC inlet cable back under the pressure wall.



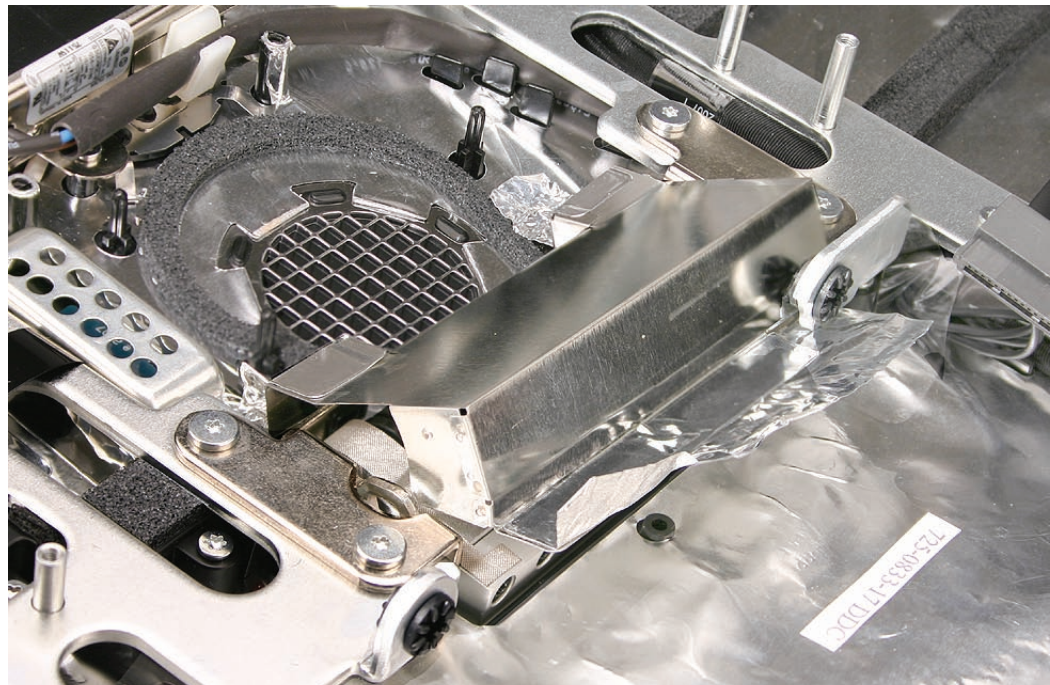
8. Replace the stand and stand screws.



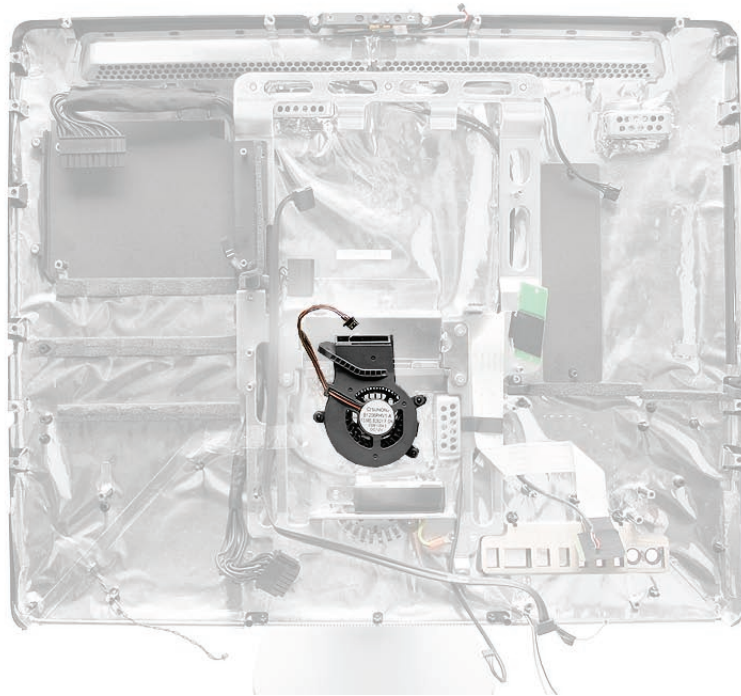
9. Re-stick the EMI tape on the mechanism.



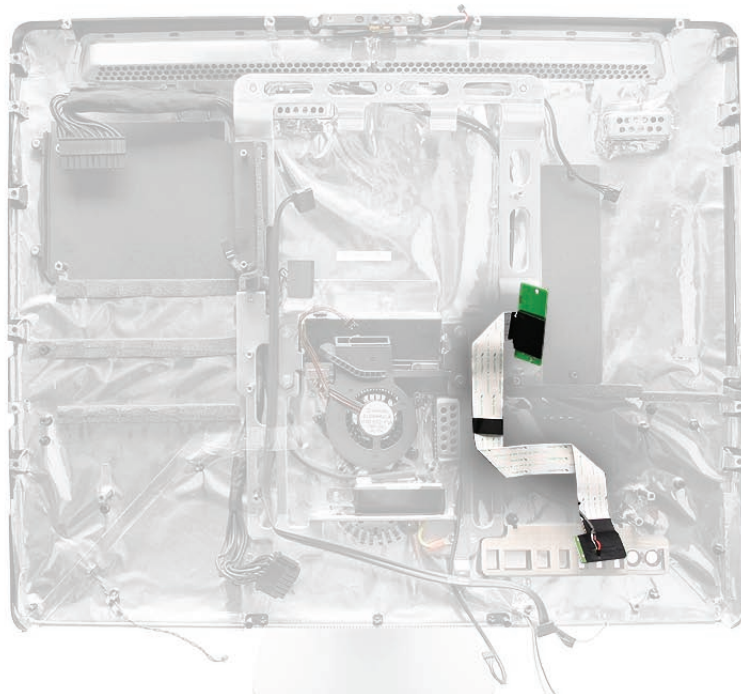
10. Replace the mechanism cover. Re-stick the EMI foil to the rear housing.



-
11. Replace the hard drive fan.



12. [Replace the hard drive.](#)
13. Replace the optical drive flex cable if removed.



-
14. Replace the optical drive.
 15. [Replace the logic board.](#)
 16. [Replace the right speaker.](#)
 17. [Replace the display panel.](#)
 18. [Replace the front bezel.](#)
 19. [Clean and replace the glass panel.](#) **Note:** This step is very important. Follow the procedures to ensure the glass is clean and free of particles.
 20. [Replace the access door.](#)



Troubleshooting

iMac (20-inch Early 2008)



General Information

Serial Number

The serial number for this iMac model is located on the bottom of the computer stand.



Power On Self Test (POST)

Intel-based Mac computers such as the iMac rely on a combination of tones and blinking LEDs to display Power On Self Test (POST) error codes.

- If the computer detects out-of-specification or no SDRAM or the RAM installed does not meet the appropriate specifications, the screen will remain black but the computer will beep. This error condition may be due to physically damaged RAM, installing the incorrect type of RAM, or not having RAM installed.
- Some RAM may appear to pass the Power-On-Self-Test (POST) but still cannot be used by the operating system. In this case, the computer will display a gray screen, sound three tones and repeat the tones until the computer is turned off.
- The solution to both of these situations is to first re-seat the memory and test the computer again. If the memory fails the POST test again, try memory that has been verified to work correctly on another system (i.e., “known-good”) or order new memory.

Firmware Updates

Firmware is the name given to software that is written into memory circuits such as flash memory, that will hold the software code indefinitely, even when power is removed from the hardware. Firmware on Intel Mac computers is designed to be updated if necessary through a software update.

Information about firmware versions for Intel Macs can be found in Knowledge Base article [303880](#) Mac OS X: Firmware Updates for Intel-based Macs.

DDR Memory

The iMac computer has two SDRAM slots in the bottom of the computer. The iMac ships from the factory with at least 1 or 2 GB MB of DDR2 SDRAM installed, depending on the configuration.

The maximum amount of RAM you can install in the iMac is 4 GB total. You can use small-outline dual inline memory modules (SO-DIMMS) of 512 MB, 1 GB, or 2 GB that meet all of these criteria:

- PC2-5300
- unbuffered
- nonparity
- 200-pin
- 800 MHz DDR2 SDRAM

Note: DIMMs with any of the following features are NOT supported in this iMac:

- registers or buffers
- PLLs
- ECC
- parity
- EDO RAM

How to Reset the System Management Controller (SMC)

The System Management Controller (SMC) is a chip on the logic board that controls all power functions for your computer. If your computer is experiencing any power issue, resetting the SMC may resolve it. The SMC controls several functions, including:

- Telling the computer when to turn on, turn off, sleep, wake, idle, and so forth.
- Handling system resets from various commands.
- Controlling the fans.

Note that resetting the SMC does not reset the PRAM. Resetting the SMC will not resolve issues in which your computer is unresponsive—in these situations, restarting your computer will generally suffice. If your computer isn't responding, perform these steps one at a time, in this order, until the issue has been resolved:

1. Force Quit (Option-Command-Escape).
2. Restart (Control-Command-Power).
3. Force Shut Down (press the power button for 10 seconds).

Resetting the SMC can resolve some computer issues such as not starting up, not displaying video, sleep issues, fan noise issues, and so forth. If your computer still exhibits these types of issues after you've restarted the computer, try resetting the SMC.

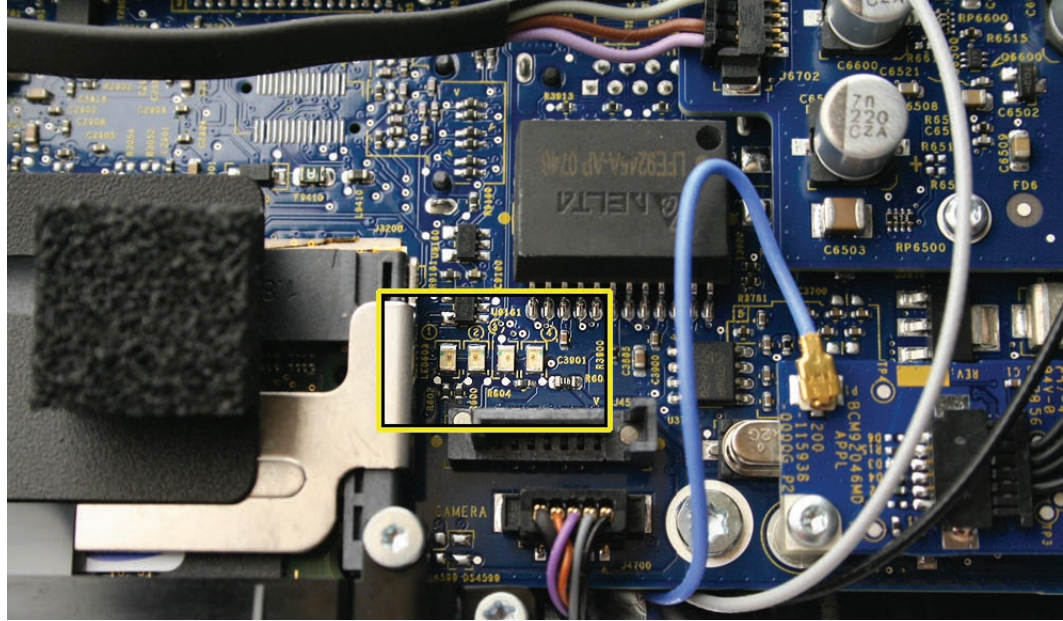
To reset the SMC on an iMac

1. From the Apple menu, choose Shut Down (or if the computer is not responding, hold the power button for approximately ten seconds until it powers off).
2. Unplug all cables from the computer, including the power cord.
3. Wait at least 15 seconds. The SMC reset occurs automatically once the iMac has been unplugged from the AC power source for several seconds.
4. Plug the power cord back in, making sure the power button is not being pressed at the time.
5. Reconnect your keyboard and mouse to the computer.
6. Press the power button on the back to start up your computer.

Note: The iMac does not have a button on the main logic board for resetting the SMC, which eliminates the need to remove the computer's cover to reset it (as required for some other models).

Diagnostic LEDs

The iMac has four built-in diagnostic LEDs on the main logic board that can help you to troubleshoot the computer. The four LEDs are located to the right of the memory slot, under the hard drive data cable. **Note:** The cable has been removed in this photo.



LED #1

- Indicates that the trickle voltage from the power supply has been detected by the main logic board. This LED will remain ON whenever the iMac is connected to a working AC power source. The LED will remain on even when the computer has been shut down or put to sleep. The LED will turn off only if the AC power source is disconnected or the power supply is faulty.

LED #2

- Indicates that the main logic board has detected proper power from the power supply when the computer is turned on. This LED will be ON when the computer is turned on and the power supply is working correctly.

LED #3

- Indicates that the computer and the video card are communicating. This LED will be ON when the computer is communicating properly with the video card. If LEDs 1 and 2 are ON and you heard the startup sound, but LED 3 is OFF, then the video card might be installed incorrectly or need replacement.

LED #4

- Indicates that the computer and the LCD display panel are communicating. This LED will be ON when the computer is turned on and video signal is being generated. If the LED is ON and there is no image on the LCD display panel, the LCD display panel or inverter might be installed incorrectly or need replacement.

Apple Hardware Test (AHT) Error Codes

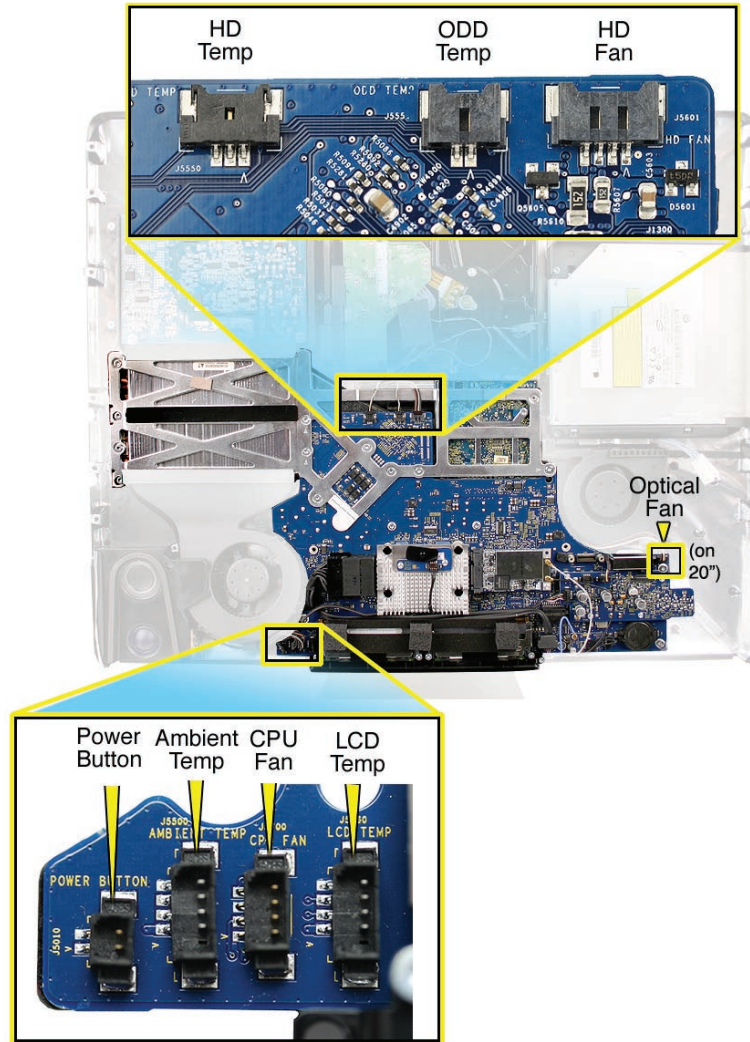
The error codes listed below are the most likely codes that will be generated if a sensor cable is disconnected, dislodged, or if the system has a faulty cable or sensor. Clicking on the link in the chart will show you where the sensor and/or cable connector is located. Or, reference the next two [logic board topics](#) which show a picture of the logic board and the sensor locations.

AHT Error	Suspected part	Suggested Action	Notes
4SNS/1/40000000:Tp0P	Power supply sensor pin/power supply	Verify that the single pin connector on the top edge of the power supply is present and securely plugged in. If connector is damaged replace the DC Power Supply cable.	If this sensor signal wire is disconnected or faulty the CPU fan will run at full speed.
4SNS/1/40000000:T00P	ODD temperature sensor on ODD damaged or cable disconnected from MLB	Verify that the sensor cable is securely connected to the MLB and the sensor is properly attached to the ODD mechanism. Replace the sensor if it is damaged.	If this sensor is disconnected from the MLB or it is faulty the ODD fan will run at full speed.
4SNS/1/40000000:TA0P	Ambient temperature sensor damaged or cable disconnected from MLB	Verify that the sensor cable is securely connected to the MLB and the sensor attached to the left speaker housing properly attached. Replace the sensor if it is damaged.	
4SNS/1/40000000:TL0P	LCD temperature sensor on LCD damaged or cable disconnected from MLB	Verify that the LCD sensor cable is securely connected to the MLB and the sensor is attached to the LCD. Replace the sensor if it is damaged.	If the sensor is disconnected the CPU fan will run at full speed.
4SNS/1/40000000:TG0H	GPU temperature sensor (located on back side of MLB/video card) is disconnected or faulty.	Verify that the two pin sensor cable is securely connected to the MLB. The connector is located on the back side of the MLB and requires removal of the MLB to access it. If it continues to fail the diagnostic replace the video card.	If the sensor is disconnected the CPU fan will run at full speed.

AHT Error	Suspected part	Suggested Action	Notes
4SNS/1/40000000:TC0H	CPU temperature sensor (located on back side of MLB) is disconnected or faulty.	Verify that the two pin sensor cable is securely connected to the MLB. The connector is located on the back side of the MLB and requires removal of the MLB to access it. If it continues to fail the diagnostic replace the logic board.	If the sensor is disconnected the CPU fan will run at full speed.
4MOT/1/40000002:ODD	Optical drive blower/fan	Verify that the ODD blower/fan cable is securely connected to the MLB and that there are no obstructions that would prevent the blower/fan from rotating. Replace the optical blower/fan if the error continues.	
4MOT/1/40000002:HDD	Hard drive blower/fan	Verify that the hard drive blower/fan cable is securely connected to the MLB and that there are no obstructions that would prevent the blower/fan from rotating. Replace the hard drive blower/fan if the error continues.	
4MOT/1/40000002:CPU	CPU blower/fan	Verify that the CPU blower/fan cable is securely connected to the MLB and that there are no obstructions that would prevent the blower/fan from rotating. Replace the CPU blower/fan if the error continues.	

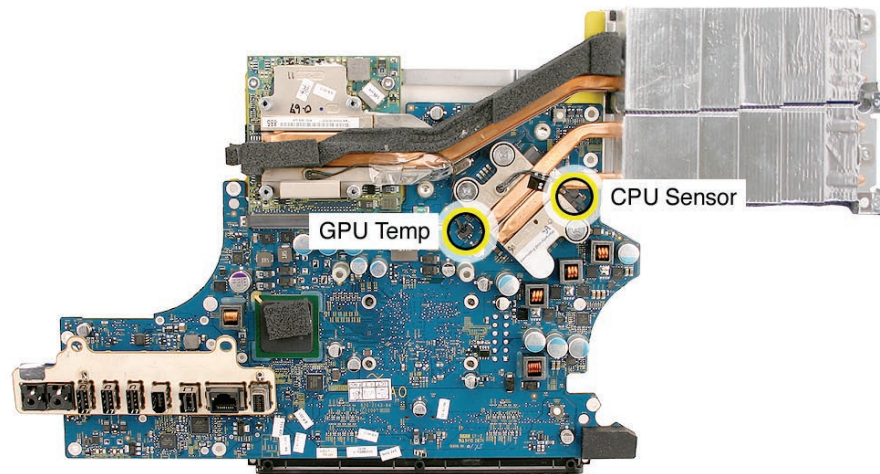
Logic Board Sensor and Fan Connector Locations, Top Side

This is a photo of the top side of the iMac (20-inch Early 2008) logic board showing the sensor and fan connector locations.



Logic Board Sensor Locations, Back Side

This is a photo of the back side of the iMac (20-inch Early 2008) logic board showing the GPU and CPU sensor connector locations.



Cleaning Tools for the LCD and Glass

The following tools are necessary when servicing this product. Order a cleaning kit, (076-1277), which contains all the items listed, or purchase the tools individually.

- Suction cups, one pair (922-8252)
- Sticky silicone roller (6-inch) to clean the glass panel, Qty. of one (922-8261)
- Sticky sheets to clean the silicone roller, Qty of 2 pads (922-8262)
- Polishing cloths, clean, anti-static, micro fiber “terry” style cloth, Qty. 5 cloths, (922-8263)
- Gloves, lint-free, anti-static, Qty. of two (922-8253)
- Microfoam bag to store the glass panel, Qty. of one (5 bags) 922-8259)
- ESD bag for LCD display storage, Qty. of one (5 bags) (922-8258)
- ESD bag for LCD display storage (922-8258)

LensPen Cleaning Tool

LENSPEN products are simple to use and are effective at removing smudges and fingerprints on the inside/outside of the glass panel. The two LENS PEN products that have been tested on the iMac are shown below, the VidiMax and the LapTop-Pro. Refer to www.lenspen.com for more information.



Ionizing Air Gun

The ionizing air gun is an optional tool you may want to consider when cleaning iMac glass panels. The ionizing gun performs electrostatic elimination and dust removal instantly with ion balanced air. Various sources can be found on Google.



Symptom Charts

When to Use the Symptom Charts

Before turning to the symptom charts, you should have completed the following steps on the Apple General Troubleshooting Flowchart:

1. Gather information
2. Verify the problem
3. Try quick fixes

You consult the symptom charts as part of the Research troubleshooting step (and sometimes as part of the Try Quick Fixes step).

How to Use the Symptom Charts

The Symptom Charts included in this chapter will help you diagnose specific symptoms related to the product. Diagnostic steps are listed on the charts in the order of most likely solution: try the steps in the order presented. Verify whether or not the product continues to exhibit the symptom. If the symptom persists, try the next step.

Important Note: If a step instructs you to replace a module, and replacing that module does not resolve the symptom, reinstall the original module before you proceed to the next step.

Diagnostics

The following diagnostic tools are available for this product:

- Apple Hardware Test
 - Distributed to customers worldwide who purchase a new Apple computer
- Apple Service Diagnostic:
 - Sent to Apple Authorized Service Providers as part of the Macintosh Family Diagnostics subscription mailing

See Knowledge Base document [112125](#), “Service Diagnostic Matrix,” to download the appropriate disc images. The Service Diagnostics Matrix is a guide to service diagnostic software from Apple, including the Apple Service Diagnostic, MacTest Pro, display service and adjustment utilities, and Apple Hardware Test for MacBook, MacBook Pro, Mac mini, iMac, eMac, PowerBook, and Power Mac products.

Apple Hardware Test (AHT) Error Codes

The error codes listed below are the most likely codes that will be generated if a sensor cable is disconnected, dislodged, or if the system has a faulty cable or sensor. Clicking on the link in the chart will show you where the sensor and/or cable is located.

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4SNS/1/40000000:TL0P	LCD temperature sensor on LCD damaged or cable disconnected from MLB	Verify that the LCD sensor cable is securely connected to the MLB and the sensor is attached to the LCD. Replace the sensor if it is damaged.	If the sensor is disconnected the CPU fan will run at full speed.
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AHT Error	Suspected part	Suggested Action	Notes
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4MOT/1/40000002:CPU	CPU blower/fan	Verify that the CPU blower/fan cable is securely connected to the MLB and that there are no obstructions that would prevent the blower/fan from rotating. Replace the CPU blower/fan if the error continues.	

Power Issues

System Intermittently Shuts Down or Restarts Unexpectedly

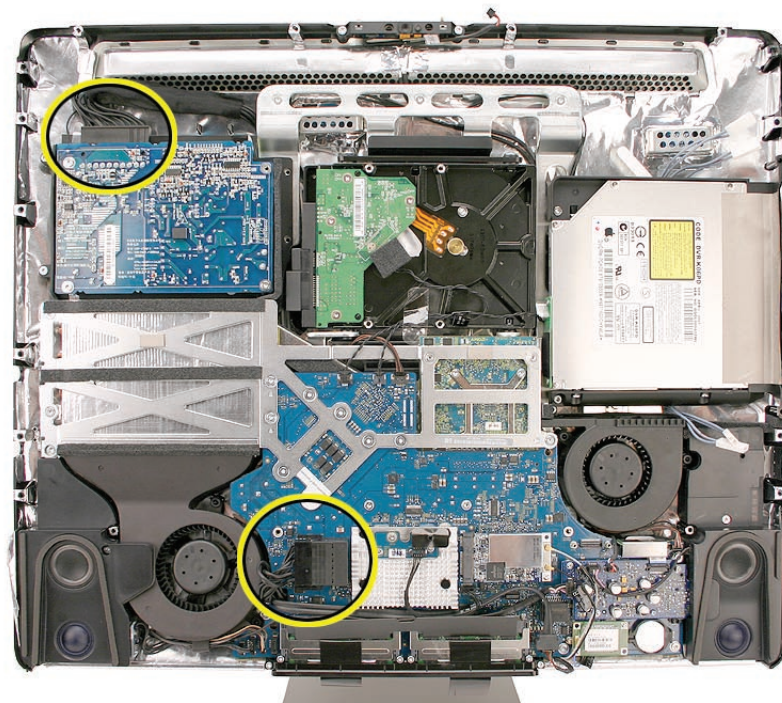
1. Check the connection of the power cord on both ends. Verify that the power cord is securely plugged into a good AC outlet and that the cable is fully inserted into the back of the computer. Did re-seating the power cord resolve the problem?

Yes: The power cord may have a loose fit or it wasn't fully inserted into the receptacle on the back of the iMac. Replace the AC power cord and test again. If the customer continues to report shut down or restart issues resume with step 2 of this troubleshooting symptom.

No: Go on to the step 2.

If the iMac has been previously serviced, verify that all cables and connectors are firmly seated. Pay special attention to the DC power supply cable where it connects to the DC power supply and the logic board (shown below).

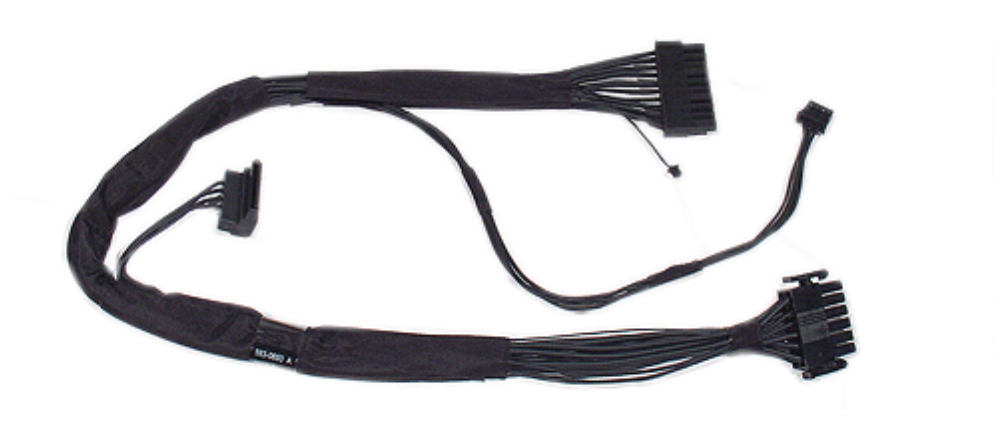
Note: The latest version of the DC Power Supply/SATA/Inverter cable (922-8188) be identified by the presence of a part number label on the end of the connector that plugs into the main logic board. With earlier versions of the cable, the part number label is hidden by the chassis and cannot be easily viewed when it is installed in an iMac.



2. Does the computer continue to unexpectedly shut down or restart?

Yes: Replace the DC, Power Supply/SATA/Inverter cable (922-8188) shown below. **Note:** The latest version of the DC Power Supply/SATA/Inverter cable be identified by the presence of a part number label on the end of the connector that plugs into the main logic board. With earlier versions of the cable, the part number label is located on the cable, but the label is hidden by the chassis, and cannot be easily viewed when it is installed in an iMac.

Carefully follow the take-apart instructions to ensure that the replacement cable is correctly routed and the sensors and fans are properly connected. Test thoroughly. Run Apple Hardware Test. Refer to the Apple Hardware Test [Error Code Table](#) if you incur an error.



No: Return the computer to the customer. If the customer continues to report shut down or restart issues during the next month resume with step 3 of the troubleshooting.

3. Replace the power supply.
4. Replace the main logic board.

No Power

The computer will not turn on. The display remains black and there are no sounds from the fans or drives.

1. Verify the power outlet is good. Plug a different device into the socket to ensure there is power, or plug the iMac into another outlet. Does the iMac power on now?

Yes: Resolved. Bad outlet.

No: Go on to the next step.

2. Check the power cord. Use a known good power cord. Does the iMac power on now?

Yes: Your power cord has failed. Replace the AC power cord.

No: Go on to the next step.

3. Check the connection of the power cord on both ends. Verify that the power cord is securely plugged into both the AC outlet and back of the computer. Does the iMac power on now?

Yes: You may have a loose fit to your power cord. Replace the AC power cord and test.

No: Go on to the next step.

4. Follow instructions in the General Information chapter to [reset the SMC](#). Does the iMac power on now?

Yes: Issue resolved.

No: Go on to the next step.

5. Remove and reinstall the SO-DIMM memory modules, located in the bottom of the computer. Does the iMac power on now?

Yes: Issue resolved.

No: Go on to the next step.

6. Remove the memory access door and front bezel to gain access to the four diagnostic LEDs. See "[Diagnostic LEDs](#)" in the General Information chapter for complete instructions on this procedure.

7. Plug the power cord into the iMac and the power cord into the AC outlet. Check to see if LED #1 is On or Off.

LED #1 is On: This indicates that the power supply is getting good power from the AC outlet. Go on to the next step.

LED #1 is Off: This indicates that the computer is not detecting AC power. If both the AC outlet and the power cord are good, replace the AC/DC power supply. If the issue persists, replace the AC line filter.

8. Press the power button. Check to see if LED # 2 comes On, comes on momentarily, or stays Off.

LED # 2 is On: The Power Supply is functioning. Go on to the next step.

LED # 2 comes on momentarily or stays Off: Replace the Power Supply.

9. At this point in the Power On process, you should hear a boot chime and see that LED #1 and #2 are On. Do you hear a boot chime?

Yes: The power systems of the computer are working correctly. See “Troubleshooting No Video” in this chapter.

No: The logic board is not passing the Power-On Self Test (POST). Replace the SDRAM with known-good memory and test. If the issue persists with known-good SDRAM, replace the logic board.

Appears to be a “no power” situation, but the computer turns on, the display remains black and the fans are running.

1. Make sure all software updates have been applied to the computer.
2. Check that all the temperature sensors are connected.
3. Run Apple Hardware Test to verify all sensors and cables are connected and functioning. Refer to the Apple Hardware Test [Error Code Table](#) for additional information.

Video

No Video, No Boot Chime

The computer will turn on, but there is no boot chime and no video on the display. The faint sound of the fans, hard drive, and optical drive may also be heard.

1. Make sure all software updates have been applied to the computer.
2. Follow instructions in the “General Information” chapter to [reset the SMC](#). Does the computer display video after successfully resetting the SMC?

Yes: Problem solved.

No: Continue to next step.

3. Verify that only supported SDRAM memory has been installed and that it has been installed correctly. Unsupported and/or defective memory can prevent the computer from booting. It may be necessary to install known good memory for testing purposes and replace any unsupported or defective SO-DIMM's identified during this process. Does the computer display video after verifying and/or replacing the memory with known good memory?

Yes: Problem solved. Verify full system functionality before return the system to the customer.

No: Replace the logic board.

No Video, Boot Chime Heard

The computer will turn on, the boot chime is heard and fan or drive activity can be heard, but the display has no picture or color.

1. Make sure all software updates have been applied to the computer.

2. Check if the computer is sleeping. Press the space bar to wake the computer from sleep mode. Did the computer wake from sleep?

Yes: Put the computer to sleep from the Apple menu and wake the computer again to test. Check Energy Saver setting to see when the computer has been designated to sleep.

No: Continue to next step.

3.. Reset your computer's PRAM (Parameter RAM):

- Shut down the computer.
- Locate the following keys on the keyboard: Command, Option, P, and R.
- Turn on the computer.
- Press and hold the Command-Option-P-R keys simultaneously. You must press this key combination before the gray screen appears.
- Hold the keys down until the computer restarts and you hear the startup sound for the second time.
- Release the keys.

4. Does the computer display video after successfully resetting the computer's PRAM?

Yes: Restart the computer from the Apple menu and make sure the computer is working correctly before returning the computer to the customer.

No: Continue to next step.

5. Make sure the machine is powered off, and remove the access door and front bezel to access the [diagnostic LEDs](#). Plug in and start up the computer to observe the diagnostic LEDs. At this point in the Power On process, you should hear a boot chime, and LED #1 and #2 are On. Is LED #3 On or Off?

LED # 3 is On: The video card and logic board are communicating properly. Go to the next step.

LED # 3 is Off: The video card and logic board are not communicating. Replace the video card. If the issue persists, replace the main logic board.

6. LED #4 should be On when the video card and LCD display have communicated properly to produce a video image. Is LED #4 On or Off?

LED # 4 is On: The video card and LCD display have communicated to LCD video. In this case, there is a problem with the backlights in the panel or the inverter. First, make sure the four inverter cables are fully inserted into the panel connectors and check that the four wires have not been pinched. Next, with the computer powered on, turn the display at an angle to you and look closely at the display. It may be necessary to dim the room lights. Is the display

completely black, or can you see a dim light or purple glow to the display?

Completely black: Replace the inverter.

Dim light or purple glow: The inverter and panel backlights are functioning. Replace the LCD display panel.

LED # 4 is Off: The video card and logic board are unable to communicate to generate video. Replace the video card.

Display is tinted another color

1. The iMac computer has a tinted glass panel covering the display, giving it a new look from previous models. Make sure this not what the customer is referring to.
1. Reset the parameter RAM. Press the Command-Option-P-R keys. When you keep all the keys held down, you will hear the startup chime over and over again (about every ten seconds) until you let go. After you hear the second chime, you can let go of the keys.
Does the computer display video after successfully resetting the computer's PRAM?
Yes: Problem resolved. Restart the computer from the Apple menu and make sure the computer display is no longer tinted another color.
No: Continue to the next step.
2. Connect an external monitor to the mini-DVI port. Does the external display exhibit the same color tinting?
Yes: Replace the video card.
No: Check the LVDS cable connections. If connected properly and the same color tinting persists, replace the LVDS cable. Does color tinting persist after changing the LVDS cable?
Yes: Replace the LCD display panel.
No: Problem solved. Restart the computer from the Apple menu and make sure the computer display is no longer tinted another color.

System Shuts Down

Unexpected Shutdown or Freezes

1. If the computer freezes or you experience unexpected shutdowns while using your applications, make sure all software updates have been applied to the computer. If this doesn't solve the issue, go on to the next step.
2. Follow the steps under "[System Intermittently Shuts Down or Restarts Unexpectedly.](#)"

Display

Black and white splotches on the LCD panel after it runs for awhile

Check the hard drive. The hard drive should be mounted with the circuit board facing up or out towards the LCD as shown in the [hard drive chapter](#). It's possible to mount the hard drive upside down (hard drive top cover facing LCD) which generates a corrupted image (black and white splotches) on the LCD panel after it runs a while.

When displaying a single color over the screen area, the LCD panel shows one or more pixels that are not properly lit.

Active-matrix LCD technology uses rows and columns of addressable locations (pixels) that render text and images on screen. Each pixel location has three separate subpixels (red, green, and blue) that allow the image to be rendered in full color. Each subpixel has a corresponding transistor responsible for turning the subpixel on or off.

There are typically millions of these subpixels on an LCD display. For example, the LCD panel used in the Apple Cinema HD display is made up of 2.3 million pixels and 6.9 million red, green, and blue subpixels. Occasionally, a transistor does not work perfectly, which may result in the affected subpixel being turned on (bright) or turned off (dark). With the millions of subpixels on a display, it is quite possible to have a low number of faulty transistors on an LCD. Therefore, a certain number of subpixel anomalies is considered acceptable. Rejecting all but perfect LCD panels would significantly increase the retail price for products using LCD displays. These factors apply to all manufacturers using LCD technology—not just Apple products.

To determine whether or not the display has an acceptable number of pixel anomalies, follow the steps below:

1. Set the display image to one of the following colors: all-white display, all-red display, all-green display, or all-blue display.
2. Using a jeweler's loupe, pocket microscope, or other magnifying device, identify and count each subpixel anomaly:
 - Bright subpixel anomaly = subpixel that is always on
 - Dark subpixel anomaly = subpixel that is always off
3. **Important:** Check the number of subpixel anomalies with the following chart:

LCD Size (inches)	Acceptable Number of Subpixel Anomalies			Replace the Display		
	Bright	Dark	Both	Bright	Dark	Both
24	up to 8	up to 10	up to 15	9 or more	11 or more	16 or more

4. If the number of subpixel anomalies exceeds the acceptable number listed in the chart, replace the LCD panel.
5. If the number of subpixel anomalies is acceptable, explain to the customer that the pixel anomalies are within specifications, and no repair is necessary.

Important: Do not release the specifications to customers. Instead, inform them that a certain number of subpixel anomalies is considered acceptable, and these factors apply to all manufacturers using LCD technology—not just Apple products.

Hard Drive

Flashing question mark, or an alternating question mark and Mac OS (face or a folder)

Note: When troubleshooting hard drive problems it is a good idea, if possible, to back up any important data. Some troubleshooting steps may require erasing the contents of the hard drive.

1. Boot from the system CD that came with the computer, and open Disk Utility. Does the hard drive show in Disk Utility?
Yes: Run Repair Disk and Repair Permissions to correct any directory and permissions issues. Go on to Step 2.
No: Go to Step 3.
2. Did Disk Utility successfully repair directory or permissions?
Yes: Restart the computer to the hard drive. Go on to Step 3.
No: Go to Step 3.
3. Did the computer successfully start to the internal Hard Drive?
Yes: Run Apple Hardware Test for this machine and return to the customer if it passes.
No: Boot the machine to Apple Hardware Test or to the Apple Service Diagnostic.
4. Did the machine successfully boot to the Diagnostic?
Yes: Run the test suites.
No: Make sure you're using the correct version of the Diagnostic, and that the disc is able to boot another machine that it supports. If so, then try booting from an external optical drive. If this is successful, you should replace the optical drive and retest the machine booting to the diagnostic disc.
5. Did the tests pass?
Yes: Reinstall the System Software that came with the computer and test.
No: Replace the component (s) indicated by the test results.

Hard Drive Information

Note: The following information is for Intel-based and PPC Macintosh drive compatibility

- Drives to be used in booting Intel-based Macintosh hardware should be formatted and partitioned with an Intel-based Macintosh disk utility running on Intel-based Macintosh hardware. That should ensure you get the correct default partition map and structure for reliable booting.
- Intel-based Macintosh CPUs in Target Disc Mode will only mount on PPC machines running Mac OS X 10.4.10 or later, and may show one contiguous partition rather than separate partitions on the host machine.
- Always make sure to use the OS that came with the machine if you need to reinstall software (ask the customer for the discs if necessary), and the diagnostics specifically designated for that hardware.

System hangs during normal startup process

1. Make sure all software updates have been applied to the computer.
2. Boot from the system CD that came with the computer. Use Disk Utility to verify the hard drive.
3. Using Disk Utility, reformat the hard drive.
4. Check all cable connections to and from the hard drive.
5. Replace the hard drive data cable.
6. Replace the hard drive.
7. Replace the logic board.

Optical Drive

CDs or DVDs don't show up on the Desktop

1. Select Preferences from the Finder menu and make sure the option to show CDs, DVDs and iPods is checked: in the General window as shown below.



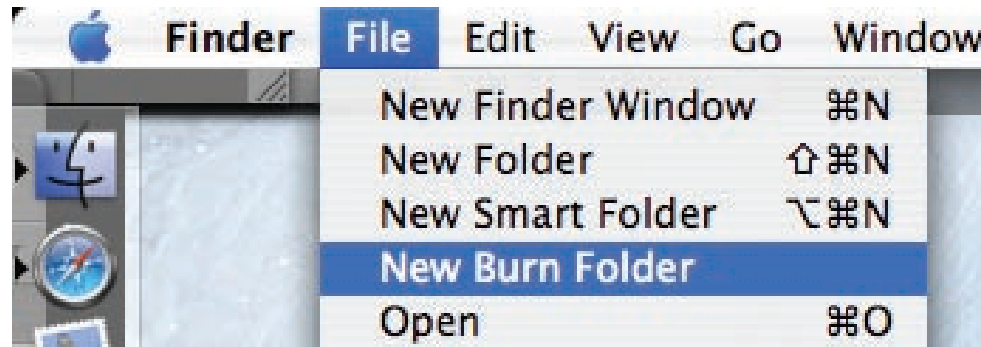
2. Select System Preferences from the Apple menu and open the CDs & DVDs preferences window. Make sure that audio CDs are set to launch iTunes and movie DVDs set to launch DVD Player when those media are inserted, as shown below.



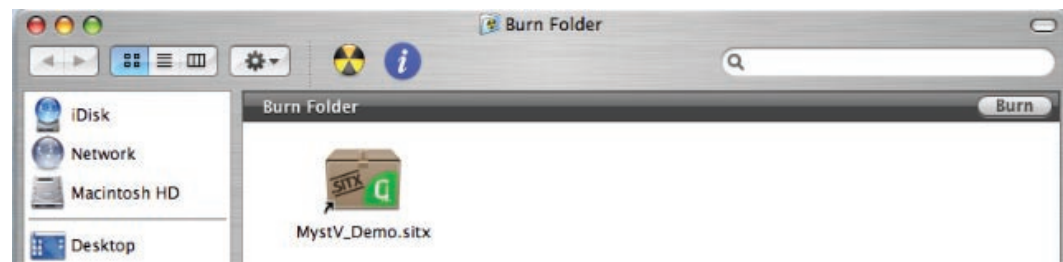
3. Check that the drive can read discs normally. Insert an audio CD and check whether it shows up on your desktop or launches iTunes.
Does the audio CD mount on the desktop or in iTunes?
Yes: The drive seems to read CD discs okay. Go on to Step 4.
No: Make sure the disc is readable by other computers. Try other CD discs. If none mount or no audio CDs launch iTunes, replace the optical drive.”
4. Eject the audio CD and insert the iMac Software Install and Restore DVDs that came with the customer’s computer, or insert a DVD movie.
Does this disc show up on the desktop, or does the movie launch DVD Player?
Yes: The computer is reading CD and DVD media. This may be related to a specific disc or discs the customer is using and you should examine those discs.
No: The optical disc is reading CD media, but not DVD media. Try other DVD discs. If none mount or movie DVDs do not launch DVD Player, replace the optical drive flex cable.
5. If after replacing the optical drive flex cable the drive still won’t mount any optical media, replace the optical drive. If the issue persists, then replace the logic board.

The computer won't burn discs

1. Check whether the drive can read CDs and DVDs normally. Perform the steps above for "CDs or DVDs don't show up on the Desktop."
2. Try a test burn by creating a Burn Folder, as follows.
 - In the Finder, choose "New Burn Folder" from the File menu.



- Open the Burn Folder, drag an item inside for testing, and click "Burn" in the upper right corner of the window.



- When prompted, insert a blank disc and follow the dialog instructions.
Does the disc burn successfully (problem solved), fail with an error, or is the disc ejected?
3. If the disc fails to burn with an error, check for these error messages.
 - Unknown Error -2147352480.** See Knowledge Base article [25480](#) and [25750](#) for more information.
 - Buffer underrun error.** See Knowledge Base articles [25480](#) and [25750](#) for more information.
 - Unknown Error.**
 4. If the blank disc is ejected, try another blank disc. If the issue persists, try another brand and speed of blank media; if you're using blank CD media, see if this happens with blank DVD media. If the drive consistently rejects all blank media, or only rejects blank CD media while accepting blank DVD media or vice versa, replace the optical drive flex cable and test.
Does the drive successfully burn to disc after replacing the optical drive flex cable?
Yes: Problem solved.
No: Replace the optical drive. Does it burn correctly now?

Yes: Problem solved.

No: Replace the logic board.

Optical drive does not accept CD / DVD disc

The optical drive on this computer has narrow tolerances for the recommended optical media. If the drive does not accept discs, the wrong kind of disc could be inserted.

1. Open the computer and slowly lift the panel. Verify that the four inverter-to-panel-cables are not resting on top of the optical drive. The inverter cables should be tucked into the open areas at the top and the bottom of the optical drive. The optical drive is delicate and if the cables are pressing on the top of the optical drive it could impair the functionality of the optical drive.
2. Check for a small (non-standard) disc or other foreign object stuck inside. Remove the optical drive from the system to extract a stuck disc. See Knowledge Base article [86382](#) - "Macintosh: How to Remove a Stuck Disc From a Slot-Loading Drive."
3. Reseat the optical drive into the rear housing. After replacing the optical drive, plug in the computer and test the optical drive by inserting and ejecting DVD-R media. Repeat the insert/eject test three times.
4. After reinstalling the optical drive, can you now insert a disc?
Yes: Issue resolved. Run diagnostics and return the system to the customer.
No: Replace the optical drive flex cable and trying inserting a disc again.
5. After replacing the optical drive flex cable, can you insert a disc now?
Yes: Issue resolved. Run diagnostics and return the system to the customer.
No: Replace the optical drive.

Disc will not eject

1. Verify disc is not in use by quitting any applications that may be using the disc.
2. Verify drive slot is not blocked, bent, compressed or damaged.
3. Press and hold Media Eject key at top right corner of keyboard. If that does not work, hold down Function (fn) key then Media Eject key in sequence, then together simultaneously.
4. Drag disc icon to trash, or select it and press Command-E.
5. If none of these options eject the disc, you may have to disassemble the drive to recover the disc. See Knowledge Base article [86382](#) - "Macintosh: How to Remove a Stuck Disc From a Slot-Loading Drive."
6. Reseat the optical drive mechanism in the rear housing.
7. Disconnect all peripheral devices, especially the mouse in cases where the disc is constantly ejecting. Retest. If the issue is resolved, reconnect peripherals one-at-a-time until faulty peripheral is identified
8. Replace the optical drive flex cable.
9. Replace the optical drive.
10. Replace the logic board

Fan Sound

Fans running at full speed after the computer turns on

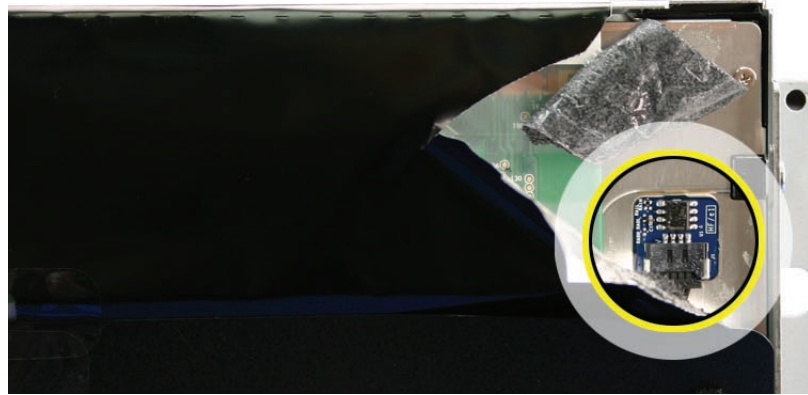
1. The customer may have entered a diagnostic mode that causes the fans to run at full speed.* Restarting the system will not restore normal fan operation. To solve the problem, the user or technician should follow instructions in the “General Information” chapter to [reset the SMC](#).

***Note:** Customers reporting this symptom should be told to press the power button AFTER the power cord has been fully inserted. Inserting the power cord while pressing the power button will cause the fans to run at full speed.

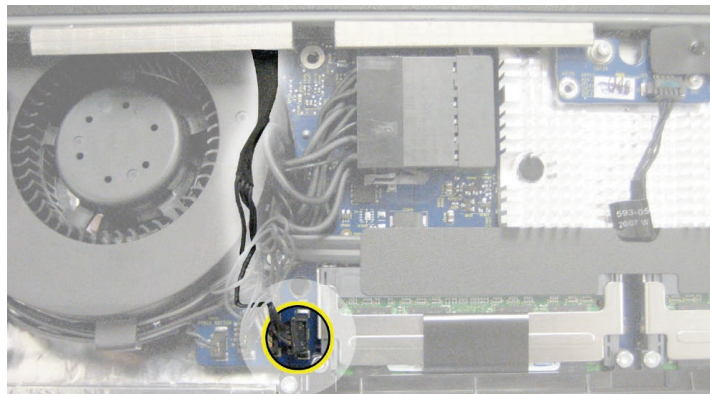
2. Verify that one of the several temperature sensors is not disconnected. Run AHT and ASD to verify sensor functionality. This problem is most likely to occur after a repair. Be sure to check ALL sensor connections (hard drive sensor, optical sensor, LCD sensor on the back of the panel and it's connection to the left corner of the logic board, and the sensor on the cpu fan connecting to the bottom left corner of the logic board.)
3. Refer to the [Apple Hardware Test Error Code chart](#) for a suggested service action.

System noisy, fails Apple Hardware Test for temp sensor

1. Check the AHT error code on the [Apple Hardware Test error code chart](#).
2. Make sure the LCD temp sensor cable is connected to the sensor on the back of the LCD panel in the top right corner.



3. Make sure the LCD temp sensor cable is fully inserted into the connector on the bottom left side of the logic board.



Loud fan noise coming from inside the computer

The iMac has a trio of fans that circulate air throughout the system. It also includes temperature sensors, and advanced thermal software that spins the fans fast or slow as needed. As the system usage increases, the fans will adjust their speed using advanced thermal software to meet the cooling needs of the system.

Under normal conditions, rotating fans will make a slight hum that varies in relationship with their rotational speed and the amount of air that they are moving. In addition, the normal functioning of the hard drive and optical drive will generate additional whirring and scratching sounds that may be audible. All of these sounds are normal and do not indicate a failure with your computer.

1. To begin troubleshooting a possible fan issue first run Apple Hardware Test and refer to the [error codes chart](#) in this chapter. Did running Apple Hardware Test identify the suspected part or module?

Yes: Connect or replace the sensor or cable causing the loud fan noise.

No: Go on to the next step

2. We need to qualify the sound that you're experiencing. Does the sound occur only under specific light/heavy usage conditions?

Yes: CPU intensive applications such as iTunes, Garage Band, DVD Player, etc., or two or more applications open at once will cause the fans to run at an increased rate making them more noticeable. If the sound only occurs when one or more of these applications is running, this is normal.

No: If the sound isn't affected by CPU intensive application it may be due to other factors. Go on to the next step.

3. Is the sound always present, or does the sound vary?

The sound is always present: The normal functioning of the hard drive and optical drive will generate additional whirring and scratching noises that may be audible. Check whether this sound is related to one of the components. Go to step 4.

The sound varies: Under normal conditions rotating blowers will make a slight hum that varies in relationship with their rotational speed and the amount of air that they are moving. Let's see if this is indeed the case. Go to Next Step.

4. Are the fans making a normal humming sound that increases/decreases in relation to processor usage? As the fans increase their speed to cool the system the sound level will increase.

Launch the Activity Monitor application included with Mac OS X in the Utilities folder to determine whether the noise corresponds with heavy usage of the CPU. Does fan activity increase / decrease with the CPU Usage graph in Activity Monitor? Check by running CPU intensive applications such as iTunes.

Yes: This is normal operation and none of the fans require replacement.

No: If the fan activity does not coincide with CPU usage, the sound you're hearing may not be fan activity. Go to the Next Step.

5. The normal functioning of the hard drive and optical drive will generate additional whirring and scratching noises that may be audible. We can isolate these noises by booting the computer to the iMac Install Mac OS X Install Disc 1.

- Place the disc in the drive, and restart your machine while holding down the "C" key as the machine starts up.

- Once at the Installer window, choose Open Disk Utility from the Installer Menu.

- Once Disk Utility is open, select the system's hard drive and on the toolbar choose Unmount. **Note:** if the drive has multiple partitions, unmount each of these partitions. This will spin down the hard drive. The optical drive will also be busy at this time; wait a moment for the optical drive to spin down also and then listen to the machine.

Is the sound still present?

Yes: With the hard drive and optical drive inactive, all you should be hearing are the fans in the machine. While booted to the CD, these fans should be running at a lower level since CPU activity is low with both drives inactive. Fan sound that includes objectionable ticking, whistling, or squealing may require further investigation and/or replacement of the particular fan. Go on to the next step.

No: The normal functioning of the hard drive and optical drive will generate additional whirring and scratching sounds that may be audible. All of these sounds are normal and do not indicate a failure with the machine. "

6. Shut down the computer, remove the power cord and any other connected cables, and remove the access door and front bezel.
Stand up the computer, plug it in, and start it up by pressing the external power button.

As the machine starts up, listen carefully to each of the three fans, and see if you can locate the fan from which the objectionable ticking, whistling, or squealing sound is coming. The CPU fan is the left-most fan, the hard drive fan is in the center, and the optical drive fan is on the right.

Can you pinpoint the fan making the sound?

Yes: Replace the noisy fan.

No: If you can hear an objectionable ticking, whistling, or squealing sound, but you cannot identify the source of the sound, contact Apple Technical Support.

Audible buzzing, whining, or ticking noise

The iMac contains several mechanical devices such as motors and fans that may make audible buzzing, ticking, or whining noises when they are operating in a normal manner. The sounds will vary depending on how the system is used.

When troubleshooting abnormal noises try the following:

1. Verify that the computer is running a supported version of the Mac OS X operating system. If an earlier version of the operating system has been installed then the fans may run at excessive speeds.
2. Run Apple Hardware Test (AHT). Check any failure codes against the [error code table](#) in this chapter.
3. Determine that this noise is related to the computer by removing and shutting down all other devices in the vicinity of the computer that could be causing a sound.
4. Eject any media inserted into the optical drive. The optical drive will make a variety of normal sounds when accessing the optical media.
5. Quit all applications and test the computer again. Processor intensive applications may cause the fans to run at a higher RPM and therefore be more audible.
6. Boot to the latest version of Apple Service Diagnostic for this iMac and select the EFI test suite by holding down the D key during startup. The diagnostic tests fan speeds and thermal sensor functionality. Should tests fail, replace any parts indicated by the diagnostic.
7. Reboot the computer and check the computer again. If the noise persists and is unusually loud, contact Apple Technical Support.

AirPort

Not able to connect wirelessly with AirPort

1. From the Apple menu, choose About this Mac.
- 2- Click on More Info. System Profiler should open.
- 3- In System Profiler, in the column on the left, look under Network for a line called "AirPort Card". Select that line.
- 4- Does the section to the right say "No Information Found"?
 - Yes:** The computer doesn't realize it has an AirPort card installed. Go to step. 5
 - No:** The iMac recognizes that it has an AirPort card installed. Go to step 6.
- 5- Remove the access door, front bezel, right speaker, and two card mounting screws, and reseal the AirPort card. Re-install the two card mounting screws and check System Profiler again to see if the computer sees the AirPort card. Does it recognize the card now?
 - Yes:** Problem solved. Replace the front bezel and re-test the system to verify that the original symptom is resolved.
 - No:** Replace the AirPort card. Refer to the Take Apart section for AirPort Card. If the issue persists after replacing the AirPort card, replace the logic board.
- 6- Now that we know the iMac recognizes the AirPort card, check the antenna cables. If the antennas are not plugged in all the way, you may have a very short AirPort range.
- 7- Remove the access door, front bezel, right speaker, and two card mounting screws. Disconnect the card, and reconnect the antenna cable connectors to the card. Make sure the antenna connectors are firmly seated. Replace the card and other components and retest.
- 8- If the antennas are plugged in properly and the AirPort card is recognized but the problem persists, there are a number of other things that could cause issues with wireless networking. Refer to Knowledge Base document [106858](#) for more networking information.
- 9- Replace the AirPort card.
- 10- Replace the logic board.

Bluetooth [\(also see Wireless Issues topic\)](#)

Bluetooth devices won't sync with my computer

1. Make sure the computer has a Bluetooth board installed. Open System Preferences (from the Apple menu, choose System Preferences) and verify that "Bluetooth" appears in the Hardware section of the window.
2. Locate the Bluetooth board inside the computer. Reseat the Bluetooth board, Bluetooth cable, and the Bluetooth antenna.
- 3 Turn on Bluetooth. In System Preferences, click Bluetooth and then click the Settings tab. If you don't see "Bluetooth Power: On," click the "Turn Bluetooth On" button. Make sure that you also enable Bluetooth on your device too (please refer to your device's documentation for instructions).
- 4 Set up a new device. To set up a Bluetooth phone or PDA, click the Devices tab in Bluetooth preferences and then click "Set Up New Device" to open the Bluetooth Setup Assistant. Follow the onscreen instructions to set up your device. To set up an Apple Wireless Keyboard and Mouse, open System Preferences, click Keyboard & Mouse, click the Bluetooth tab, and then click "Set Up New Device" to open the Bluetooth Setup Assistant. Follow the onscreen instructions to set up your keyboard and mouse.
- 5 Recharge or replace your Bluetooth device's battery. If your Bluetooth device's battery is low, you may experience connection issues.
- 6 Download and install the latest software for the device.
- 7 Check for a Bluetooth update. Choose Software Update from the Apple menu (make sure that your computer is connected to the Internet). If newer Apple Bluetooth software exists, Software Update will find it.
- 8 Check for signal spoilers. Avoid situations in which metal objects come between your device and computer. Don't put the computer under a metal desk or locked away behind a metal cabinet. Keep cordless phone base stations, microwave ovens, and other electrical devices that operate on a 2.4 GHz bandwidth away. And make sure that the device and computer aren't more than 30 feet apart from each other.
- 9 Restart your computer. You may also want to try resetting your computer's PRAM and NVRAM.
- 10 Reset your Bluetooth device. First try turning your device off and then on again. If that doesn't work, see if you can reset your device.
11. Replace the Bluetooth board and test the computer again.
12. Refer to the Bluetooth Support site at <http://www.apple.com/support/bluetooth/>.
- 13 Replace the logic board.

IR Remote

Remote won't communicate with system applications such as iTunes or iPhoto, or with the optical drive

Make sure of the following when using the Apple Remote:

- You are within 30 feet of the front of the computer.
- You have an unobstructed line-of-sight to the front of the computer.
- You are pointing the lens end of the Apple Remote directly at the front of the computer.
- The computer is powered on and awake.
- The "Disable remote control infrared receiver" checkbox in the Security pane of System Preferences is NOT checked.
- Make sure the active application works with Apple Remote. Apple Remote uses Front Row, and from Front Row it can access DVD Player, iPhoto, iTunes, and QuickTime Player.
- Make sure the remote is paired with the computer. Access the System Preferences/Security pane and check "Unpair" if available. Close the Security pane, and re-pair the Apple Remote with the computer. See Knowledge Base article [302545](#).

1. Use a digital camera to test your Apple Remote.

If you have a digital camera or DV camera with an LCD display, you can use it to see if your Apple Remote is emitting a signal. Infrared beams are invisible to the human eye, but most digital cameras and video cameras use Charged-Coupled Device (CCD) chips or image sensors that are sensitive to infrared light.

To use a camera to test your Apple Remote, follow these steps:

- Turn on your digital camera or DV camera and remove any lens cover.
- Point your Apple Remote toward the camera lens.
- Press and hold the Menu button on the remote while looking at your camera's LCD display.

Note: you can also use the iMac's built-in camera to verify the remote using the PhotoBooth application, however if the IR sensor and remote are not functioning correctly, then pushing the buttons on the remote may activate the FrontRow features during the testing.

- If you see a faint blinking light coming from the Apple Remote in the camera's LCD, then the remote is working properly.
- If you don't see any blinking light in the camera's LCD, replace the battery in your Apple Remote and then test it again with your computer (see "iMac G5 (iSight): How to replace the Apple Remote battery" for instructions). (KBase article [302543](#))

2. Does the IR remote now communicate with an active application that works with Apple Remote?

Yes: IR remote is functioning correctly.

No: Replace Apple Remote.

IR Sensor/Receiver

Supported applications do not respond to input from the remote control

1. Perform the checks above under “IR Remote” to verify that the Apple Remote is functioning correctly, and retest. Do supported applications now respond to input from the IR remote?

Yes: Problem resolved.

No: Go to the next step.

2. Verify that the IR Sensor can be seen in the Apple System Profiler. Open the Apple System Profiler and click on the “USB” section. You should see the following listed:

IR Receiver:

Version:	0.58
Bus Power (mA):	100
Speed:	Up to 12 Mb/sec
Manufacturer:	Apple Computer, Inc.
Product ID:	0x8240
Vendor ID:	0x05ac (Apple Computer, Inc.)

Do you see the IR Receiver listed under the USB section of the Apple System Profiler?

Yes: Go on to the next step.

No: Replace the IR cable and retest. Refer to the “IR Board” take apart procedure

Do supported applications now respond to input from the IR remote?

Yes: Problem resolved.

No: Replace the IR sensor board and retest. Refer to the “IR Board” take apart procedure.

If the issue persists after replacing these parts, replace the logic board.

3. Access System Preferences and click Security. In the Security pane check the following:
 - Make sure “Disable remote control infrared receiver” checkbox is not checked.
 - If “Unpair” is available in the Security pane of System Preferences, another Apple Remote may be paired to the computer (pairing allows only one Apple Remote to control the computer). To delete a pairing between the remote and the iMac G5 (iSight), click Unpair. (You may have to enter your Administrator password to make changes in the Security pane.) After making sure these features are disabled, does the Apple Remote control the machine now?

Yes: Problem resolved.

No: Replace the IR sensor board and retest. Refer to the “IR Board” take apart procedure.

Built-in iSight Camera

The built-in camera is not recognized

1. Boot the computer to the desktop and launch iChat AV. **Note:** You do not need to be connected to a network to use iChat AV to troubleshoot. Verify that the correct versions of Mac OS X and iChat AV are installed. Reinstall or update software as needed.
2. Open the iChat AV preferences and click on the 'Video' icon. Verify whether the camera is recognized by the iChat AV software. Is the camera recognized?

Yes: the camera is recognized and video preview is normal: This indicates the camera is functioning. Pull down the 'Video' options from the menu bar and verify that the camera is enabled. The camera must be enabled to function.

No: the camera is not recognized and no video preview is visible. This indicates the camera may not be functioning properly or the camera cable is disconnected. Open the iMac and inspect the camera board (inside the front bezel) and the attached cable. Reseat the cable on the camera board and check the other end of the camera cable connections to the logic board. The camera cable connectors are on the right side of the logic board, below the optical drive and to the right of the fan. Go on to the next step if this didn't solve your problem.

3. Replace the camera board.
4. Replace the camera cable.
5. If the iSight camera still doesn't appear in System Profiler on the USB bus after replacing the camera board or camera cable, replace the logic board.

Camera recognized but no video

1. Verify that the lens assembly for the iSight camera located in the top middle of the front bezel is not obstructed by anything including Post-It notes or other objects.
2. Open the iMac and inspect the camera board (inside the front bezel) and the attached cable.
3. Replace the camera board in the front bezel and retest.

Camera image quality poor

The built-in camera is recognized by iChat AV and other supported video applications however the image quality is poor.

1. Verify that the lens assembly for the iSight camera is clean. Fingerprints and other contaminants can affect image quality. Clean the lens using a lint free lens cleaning cloth being while being careful not to scratch the lens.
2. Verify that there is sufficient lighting to produce a good quality image. Lighting which is comparable to that found in a well lit office will product a good quality image. If possible, avoid having a brightly lit background. Diffused lighting is preferred over direct lighting.

-
3. Launch iChat AV and open the iChat AV preferences. Click on the 'Video' tab. Is the video quality acceptable?

Yes: The camera is functioning normally. The image quality problems may be caused by bandwidth limitations when using iChat over the internet. Instruct the customer to use the iChat AV connection doctor feature to verify that there is sufficient bandwidth to have a video iChat session without a significant degradation of image quality.

No: The camera may not be functioning normally. Replace the front bezel for poor image quality. If the issue persists, replace the camera board and retest.

Camera recognized but no audio

1. Open the System Preferences window and click on Sound.
2. Verify that the built in iSight camera has been selected as the device for sound input.
3. Verify that the volume settings (on the slider bar) are appropriate.
4. Launch iChat AV and open the iChat AV preferences. Click on the 'Video' icon. Speak into the microphone while monitoring the microphone level indicator. Does the line level meter respond while you are speaking?

Yes: The microphone circuit is functioning correctly. Check the preference settings of any supported AV applications the customer is experiencing problems with to make sure that the microphone feature is enabled and that the internal iSight microphone has been selected as the input device.

No: Inspect both ends of the camera/microphone cable. If the microphone cable is damaged, replace the front bezel and retest. If the issue persists, replace the camera/microphone cable.

Audio quality is poor

The camera is recognized but the built-in microphone's audio quality is poor.

1. Open the System Preferences window and click on Sound.
 - Verify that the built-in camera has been selected as the sound input port.
 - Verify that the input volume settings are appropriate. Use the volume level meter to verify settings.
2. Open iMovie and create a new project. Click on the Audio button and record a sound sample. Is the sound quality acceptable?

Yes: The microphone is functioning normally. The audio quality problems may be caused by bandwidth limitations when using iChat over the internet. Instruct the customer to use the iChat AV connection doctor feature to verify that there is sufficient bandwidth to have an audio iChat session without a significant degradation of audio quality. iChat AV allows the user to limit the allocated bandwidth which could impact audio quality. Check the settings and increase the bandwidth if needed.

No: The microphone may be faulty. Replace the front bezel which houses the microphone.

-
3. Check connections on the Audio board. If the problem persists, replace the Audio board.

Speakers

Can't hear sound from the speakers

1. Disconnect any external microphones, speakers, or headphones.
2. Access System Preferences and select Sound. In the Sound pane, select Output and make sure the Internal speakers are selected as the device for sound output, the Output volume is adequate, and Mute is not selected. Do you have sound now?
Yes: Problem resolved.
No: Go to the next step.
3. Reset parameter RAM. Press Command-Option-P-R during startup but before "Welcome to Macintosh" appears. Do you have sound now?
Yes: Problem resolved.
No: Go to the next step.
4. Plug headphones or external speakers into the Line out /headphone port. Do you have sound through these devices when plugged in?
Yes: Verify that the speaker cable connector is securely attached to the audio board. If the issue persists, replace the speakers.
No: Replace the logic board
5. Verify that the speaker cable connector is securely attached to the audio board. Do you have sound now?
Yes: Problem resolved.
No: Replace the audio board. If the problem persists, replace the main logic board.

I hear sound out of only one speaker

1. Are there any external microphones, speakers or headphones plugged into the iMac?
Yes: Disconnect any external microphones, speakers, or headphones. Do you hear audio from both of the built in speakers on your iMac?
Yes: Good. It looks like the built-in speakers are working properly. This may be an issue with the microphone, speakers or headphones that were plugged into your iMac. Please work with the manufacturer to troubleshoot this issue.
No: Go to step 2.
No: Check your speaker balance. If your balance setting was set to the left or right speaker, you would only hear sound from one speaker. Go to step 2.
2. Open System Preferences. (System Preferences can be found under the Apple menu.)
3. Click once on the sound icon. Click once on the Output tab.
4. Make sure your balance setting is in the middle. After adjusting the audio balance, do you have audio from both speakers now?
Yes: It looks like the issue was the balance was not set properly.
No: Replace the speakers.

-
5. If the speakers did not solve the problem, replace the audio board.
 6. If the audio board doesn't solve the problem, replace the logic board.

Mouse [\(also see Wireless Issues topic\)](#)

The scroll bar on my mouse does not work in all directions

See Knowledge Base article [302417](#), for instructions and a QuickTime movie demonstration on how to clean the scroll ball.

My mouse doesn't work at all

1. Turn over the mouse and check the if the red LED on the underside of the mouse. Is the LED lit?

Yes: The mouse has power. Try using the mouse on another surface. Non-reflective, opaque surfaces without repetitive patterns work best. The surface should be clean, but not shiny. Optical mice won't work on glass, mirrored surfaces, glossy materials or mouse pads with pictures.

No: There is no power to the mouse. Try plugging the mouse into one of the USB ports on the machine. If the mouse won't power on from any USB port, try it on a known good machine. If the mouse fails to power on with known good machine, replace the mouse. If the mouse will power on with a known good machine, replace the main logic board.

2. If the underside LED is lit and the surface is good, and the mouse still does not track, try plugging the mouse into another USB port on the machine. Does the mouse track now?

Yes: Issue resolved. Try the other USB ports on the system to make sure you don't have a bad port.

No: Try using a known good mouse. If a known good mouse resolves the issue, replace the mouse. If a known good mouse does not resolve the issue, replace the main logic board.

My mouse works intermittently (the cursor freezes randomly) or is slow to respond

1. Try using the mouse on another surface. Non-reflective, opaque surfaces without repetitive patterns work best. The surface should be clean, but not shiny. Optical mice won't work on glass, mirrored surfaces, glossy materials or mouse pads with pictures. Does the mouse track correctly on a proper surface?

Yes: Issue resolved.

No: Check the Mouse Tracking setting in the Mouse control panel.

2. Boot to another volume (like the System Install Disc). Does the mouse track properly now?

Yes: Reinstall System Software

No: Try a using a known good mouse. If a known good mouse resolves the issue, replace the mouse. If the issue persists with a known good mouse, replace the main logic board.

Mouse tracking issues

If your Mighty Mouse is covered in fingerprints or its surface has become soiled, it can be gently wiped with a clean lint-free cloth. If necessary, moisten the cloth using only water, making sure not to oversaturate it. Be aware that the mouse contains electronic components that may be damaged if water drips from the cloth into the mouse via the seam around the scroll ball or around its underside.

The same procedure can be used to clean the scroll ball on your Mighty Mouse if it has become discolored or dirty. Use a clean lint-free cloth lightly moistened with water. Wipe the ball and the surrounding area, making sure to rotate the ball itself to ensure complete coverage. If the scrolling feels rough or if the scroll ball isn't scrolling up, down, or side-to-side, hold the mouse upside-down and roll the ball vigorously while cleaning it to help dislodge any particles that may have collected on the internal hardware. Refer to Knowledge Base document [302417](#).

Apple Wireless mouse is not responding

If the wireless mouse exhibits any of these symptoms, refer to Knowledge Base document [86496](#) - Apple Wireless Keyboard and Mouse: Troubleshooting connection Issues.

- You can't wake the computer up using the Apple Wireless Keyboard or Apple Wireless Mouse.
- You can't pair the computer with the Apple Wireless Keyboard or Apple Wireless Mouse.
- You can't maintain a connection between the computer and the Apple Wireless Keyboard or Apple Wireless Mouse

Keyboard [\(also see Wireless Issues topic\)](#)

Certain keys or none of the keys function

1. Unplug all devices from your computer, including your mouse and keyboard as well as printer, scanner, external hard drives, and hubs. (Warning: Some devices may require you to perform steps before it is safe to unplug them, e.g., external storage devices.) Be sure to unplug your hub, if you have one.
2. Plug your keyboard into the back of your computer firmly and securely. Plug your mouse into the back of your computer firmly and securely. Take special care to make sure the connector is completely in the socket. Go on to step 3.
3. Does your keyboard work now?
Yes: Problem solved.
No: Unplug your keyboard and plug it into another USB slot on the back of your iMac. Does it work now?
Yes: Replace the logic board.
No: Unplug your keyboard and plug your mouse into the port the keyboard just occupied. Go on to step 4.
4. Does your mouse work now?
Yes: Replace the keyboard.
No: Replace the logic board.

My keys are sticky or slow to respond

1. Try a known good keyboard.
2. Open System Preferences. Click on the keyboard and mouse icon. Adjust the “key repeat speed and delay until repeat” rate.
3. Replace the keyboard.

When I type, strange characters appear on the screen

1. Depending on your iMac’s settings, a simple keystroke can change your keyboard from English to Japanese. This can result in some pretty funny characters showing up when you type. To switch to the US keyboard,
2. Open System Preferences.
3. Click on the International icon.
4. Click on the Input Menu near the top of the screen.
5. Scroll down the list and uncheck any non-US keyboard layouts.
6. Close the System Preferences. Try typing a few characters. Did it solve the problem?
Yes: Problem solved.
No: Replace the keyboard.

The USB port on my keyboard doesn’t work

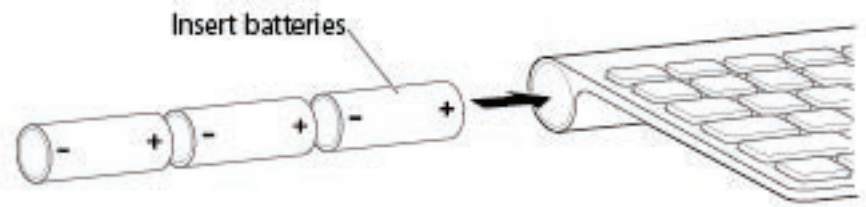
1. Unplug all devices from your keyboard.
2. Plug your Apple mouse into the left USB port on your keyboard. Does your mouse work when it’s plugged into this port?

Yes: Now plug the mouse into the right port. Does it work?
Yes: Try a known good keyboard.
No: Try a known good mouse to rule out the mouse. Then go to step 3.
No: Try a different mouse or keyboard.
3. Now unplug the keyboard from the USB port on the back of the iMac, and plug the mouse into the port the keyboard had been in. Does the mouse work now?
Yes: Replace the keyboard?
No: It appears that your USB port isn’t functioning properly. Go on to step 4.
4. Replace the logic board.

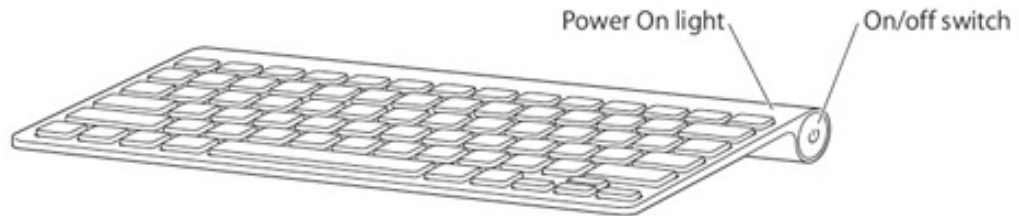
Wireless Issues [\(also see Additional Wireless Topics\)](#)

The aluminum Apple Wireless Keyboard will not turn on.

1. Confirm that the batteries are installed properly and the batteries are known good.
2. Open the battery compartment over. Make sure to install the positive and negative ends of the batteries in the keyboard as shown. The keyboard will not turn on if the batteries are incorrectly installed.



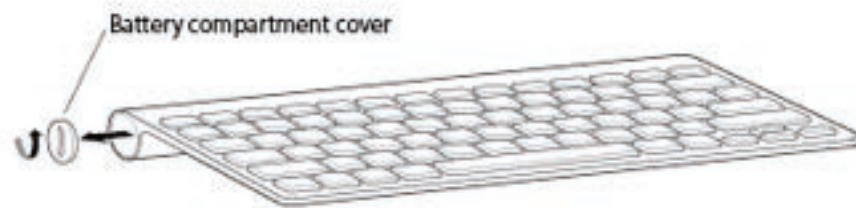
3. Replace the battery compartment cover.
4. Turn on the keyboard by pressing the Power On switch. **Important:** After three minutes, the LED light turns off. The keyboard is still on, but it is no longer discoverable. To make it discoverable again, turn it off and then turn it back on.



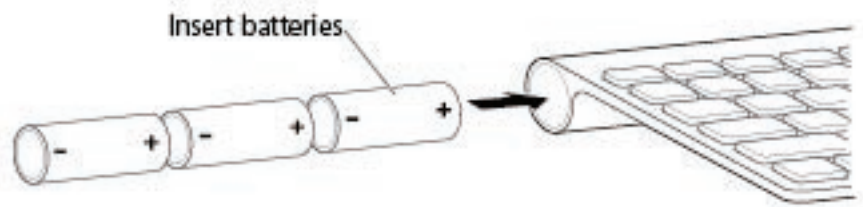
5. Does the LED Power On light come on and then go off?
Yes: Yes, the LED comes on solid and then goes off. This indicates the keyboard is already paired with a system and the keyboard is within range of a system. Issue solved.
No: The LED blinks. This means the keyboard is not paired, but it's within range of a system and it can be paired. Go on to the next step.
6. Use the Bluetooth Setup Assistant.
7. Open System Preferences and click Bluetooth.
8. Click Devices, and then click Set Up New Device. Follow the onscreen instructions.
9. Is the keyboard functioning now?
Yes: Issue solved.
No: Follow [the wireless keyboard set up steps](#) on the next page.

Can not set up the aluminum Apple Wireless Keyboard

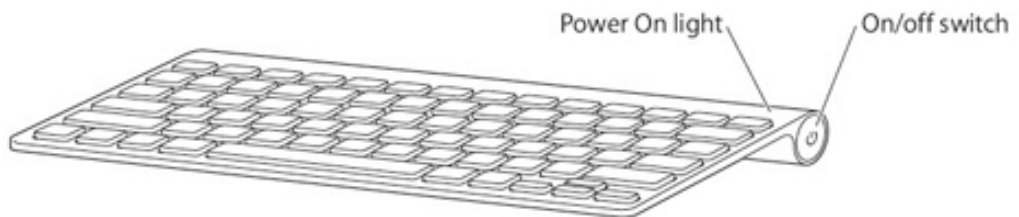
1. Confirm that you have Mac OS X v10.4.10 or later installed and install the keyboard software update. If using Mac OS X 10.4.5 or later the keyboard software update is not needed.
2. Install the batteries. Use a coin to remove the battery compartment cover.



3. Slide the batteries into the battery compartment as shown below. Replace the battery compartment cover and leave the keyboard turned off.



4. Open the Bluetooth Setup Assistant.
5. Click Continue.
6. At the Select Device Type panel, select Keyboard. Do not click Continue yet.
7. Turn on the keyboard. The light above the power switch should begin to flash.



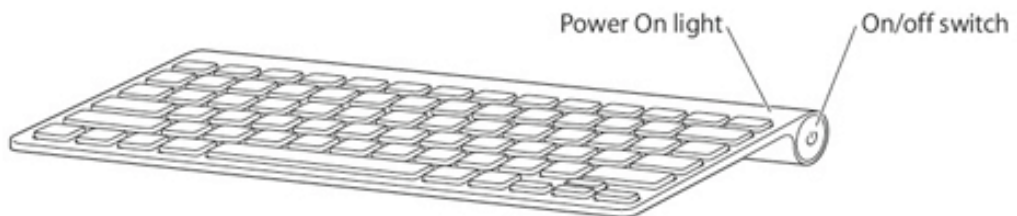
8. Click Continue. After 15-30 seconds, the keyboard's name should appear in the device list of the Search pane.
9. Select the keyboard in the Setup Assistant listing, then click Continue. The assistant will try to pair with the keyboard.
10. When the Setup Assistant prompts you to do so, type the passkey shown in the Setup

Assistant on the Apple Wireless Keyboard. Press the Return key on the keyboard when you are finished.

11. Once the assistant says the computer and keyboard have successfully paired, click Continue.
12. Setup is complete. Click Quit.

The LED is flashing on the keyboard or mouse

When your Apple Bluetooth mouse or keyboard is turned on, the light flashes twice in succession, (blink-blink-pause, blink-blink-pause). This means the keyboard or mouse is discoverable by your computer, and you can pair with it. After three minutes, the indicator light turns off. The keyboard or mouse is still on, but it is no longer discoverable. To make it discoverable again, turn it off and then turn it back on. The keyboard on/off switch is harder to find, so it's shown below. The mouse on/off switch is on the underside of the mouse.



When the Bluetooth keyboard or mouse connects with your computer, the indicator light glows steady for 3 seconds before it turns off. This indicates the keyboard or mouse has successfully paired with your computer.

While your Bluetooth mouse is connected to your computer, the indicator light blinks at a regular interval. It could blink fast or slow, but in all cases, a regular blinking pattern means the mouse is connected to your computer and is operating properly. The Bluetooth keyboard indicator light does not blink once it has made a connection to your computer.

The LED goes out on the keyboard

The LED in the top right-hand corner on the keyboard turns off several seconds after powering on the keyboard making it appear that the keyboard is turned off. This is normal keyboard behavior. **Note:** The LED is not a power indicator.

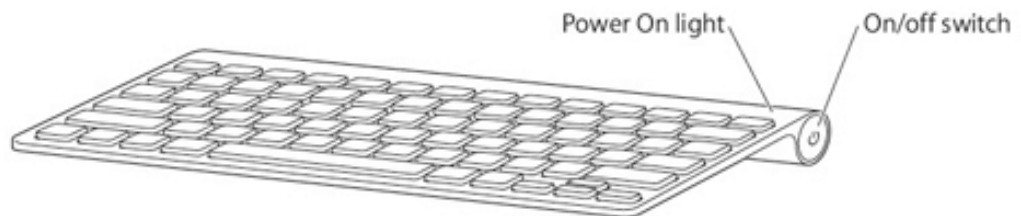
Keyboard is not discoverable

To pair your aluminum Apple Wireless Keyboard with your Macintosh computer, the keyboard needs to be in a 'discoverable mode.'

Note: If you need to put the older Apple Wireless Keyboard in a discoverable mode for pairing, see the previous topic.

Follow these steps to put the aluminum Apple Wireless Keyboard in a discoverable mode:

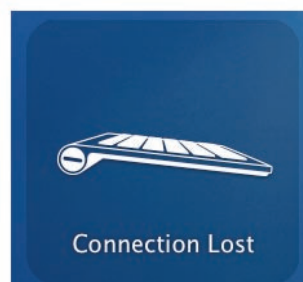
1. Open the Bluetooth Setup Assistant on your Mac:
 - [For Mac OS X 10.4.10 or later](#)
 - [For Mac OS X 10.5 or later](#)
2. Turn on the keyboard by pressing the Power button on the right side of the keyboard. The Power On light (top right corner) will begin to blink and the Setup Assistant can then scan for the keyboard in order to pair it to your computer.



3. Follow the onscreen instructions to complete pairing your keyboard.

Wireless Keyboard Connection Lost

1. The following image appears on the desktop:

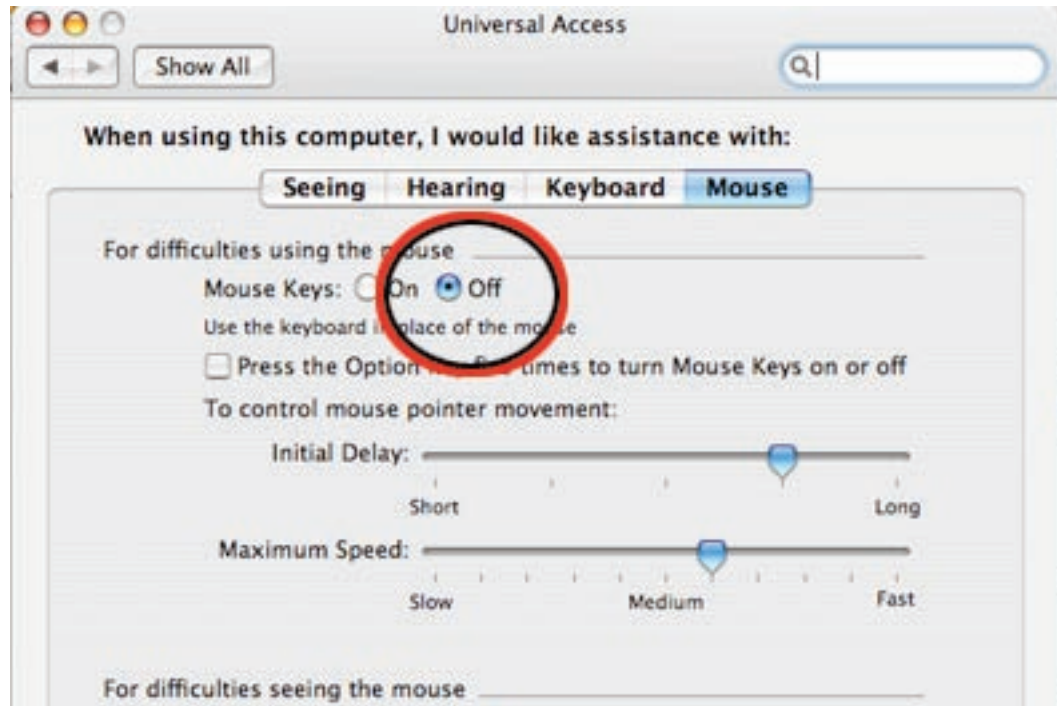


2. Reset the Apple Wireless Keyboard. Turn the power switch off for several seconds, and turn it back on. Wait a few moments after turning on the keyboard so that it can pair itself to your computer. If the keyboard is still not discoverable, go on to the next step.
3. Follow the steps listed in the previous symptom, "[Keyboard is not discoverable.](#)"

Some keys are working on the Wireless keyboard

If some keys are working, but others behave as if the Caps Lock is “ON”, and the customer was using an extended keyboard (with a number pad), but switched to an Apple Wireless keyboard, check the following setting and try the wireless keyboard again.

- Turn “Off” Mouse Keys under System Preferences-->Universal Access-->Mouse.



Additional Wireless Topics

Can't wake the computer with the wireless keyboard or wireless mouse

Refer to Knowledge Base document [86496](#) - Apple Wireless Keyboard and Mouse: Troubleshooting connection Issues.

Can't maintain a wireless connection between the computer and keyboard or mouse

Refer to Knowledge Base document [86496](#) - Apple Wireless Keyboard and Mouse: Troubleshooting connection Issues.

Using the an Apple Wireless Keyboard and Mouse

Refer to Knowledge Base document [306461](#) - Using an Apple Wireless Keyboard and Mouse.

Bluetooth: How to Set Up Your Apple Wireless Mouse

Refer to Knowledge Base document [86468](#) - Follow the instructions in this document to set up your Apple Wireless Mouse.

Bluetooth: How to Set Up your wireless Mighty Mouse

Refer to Knowledge Base document [303921](#) - Follow the instructions in this document to set up your Apple Wireless Mighty Mouse.

Error Beep(s)

Refer to [Power On Self Test \(POST\)](#) covered in the General Information section of this manual.

USB

USB port is not recognizing known devices

1. Please unplug all of your USB devices from your iMac except your Apple Keyboard and Apple mouse.
2. Now plug your device directly into the back of your iMac. Does it work as expected now?

Yes: Your device works when plugged directly into the computer. This indicates a conflict with one of the other USB devices. You can test by gradually adding your devices back and seeing where the issue occurs, then contacting the manufacturer of the device for assistance.

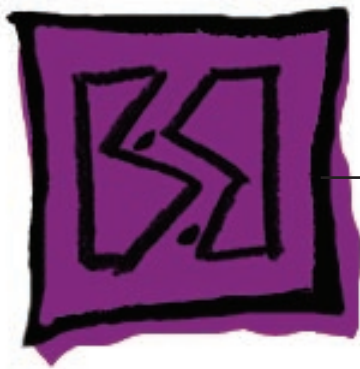
No: Unplug your device from the iMac and plug the keyboard into the port your device just occupied. Is your keyboard still working?

Yes: Your Apple Keyboard works when plugged into the USB port your device was plugged into. This points to an issue with your device. Please review the documentation that came with your device. Install any necessary drivers and contact the manufacturer of your device for assistance.

No: Replace the logic board

I see a message saying not enough power to function

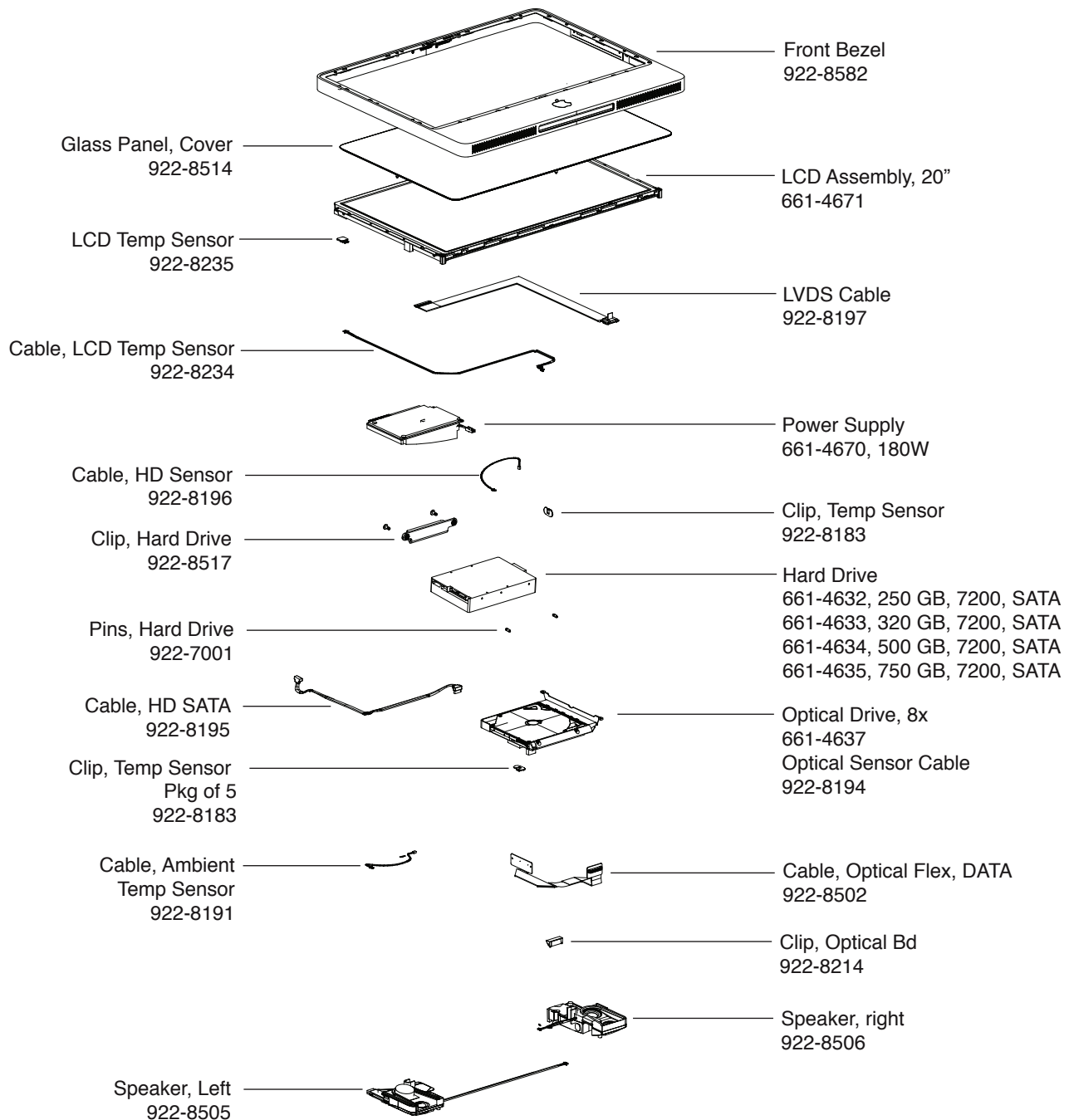
It appears that this device needs to be plugged into the computer's USB port, rather than the keyboard USB port. Any USB device connected to the keyboard needs to be either a self-powered device (a USB device with its own AC power supply), or a low-power device (a device that does not need a large amount of voltage to operate). Your device may draw more power than the keyboard can provide.



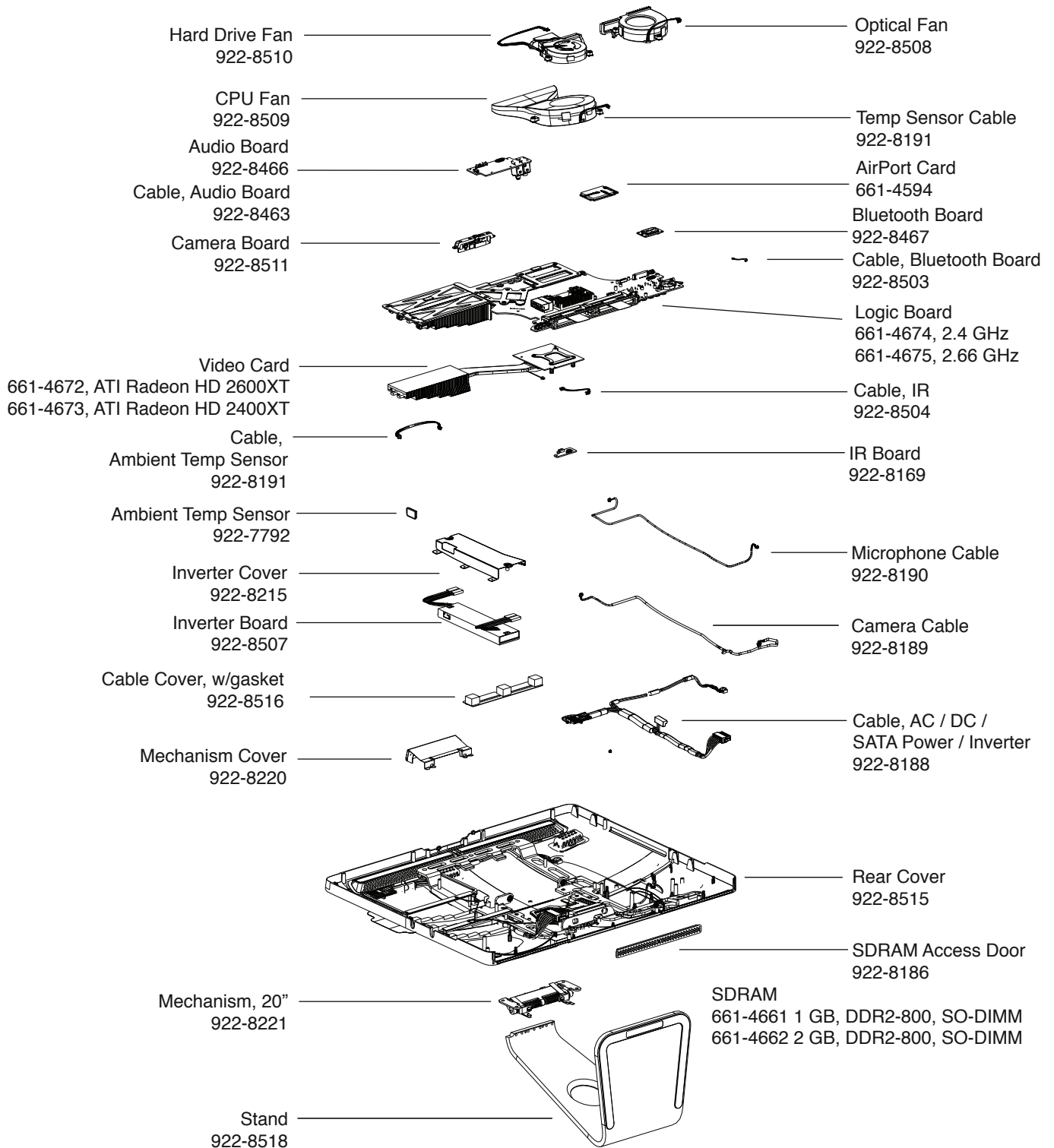
Views

iMac (20-inch Early 2008)

iMac (20-inch Early 2008)—Upper Exploded View



iMac (20-inch Early 2008)—Lower Exploded View











Screw Chart



Screw Chart: Page 1 of 3

Note: Screws are not to scale.

<p>922-6800</p> <p>T10</p>  <ul style="list-style-type: none">- Logic board to rear cover (4)- Power supply to rear cover (2)- AC power inlet to rear cover (3)- Cable guide to rear cover	<p>922-6850</p> <p>T10</p>  <p>Chassis to rear cover (6)</p>	<p>922-8250</p> <p>T10</p>  <p>Chassis to rear housing, at top of chassis (3)</p>
<p>922-7010</p> <p>T6</p>  <ul style="list-style-type: none">- Bluetooth card to Logic- AirPort card to Logic- LVDS cable to Logic- Audio board	<p>922-8256</p> <p>T6</p>  <p>IR board to heatsink (2)</p>	<p>922-8171</p> <p>T8</p>  <p>Camera assembly to rear housing</p>

922-7069 T10  AC power inlet to chassis ground (1)	922-8209 T10  Stand to clutch mechanism	922-7971 T10  Video card to heatsink support (1)
922-8249 T10  Left speaker (1)	922-8208 T10  Right speaker, (1)	922-8172 T8  LCD display to rear cover (8)
922-8207 T8  Front bezel, along bottom of LCD (4), 25mm	922- 8206 T8  Front bezel to rear cover (13mm),	922-7020 T10  Clutch mechanism to chassis (4)

922-7656 T6  Optical cable to optical drive (2)	922- 6842 T8, machine  Power Supply, right side (2)	922-7019 T8  Hard drive clip to hard drive (2)
922- 8175 T8  Logic board, each side of memory slot	922- 6800 T10  Logic board	922-8173 T8  Logic board (2)
922- 6842 T10, machine  Logic board	922-xxx T10  Pressure wall (on top of chassis, next to power supply) (2)	922-4723 T8  Video card to logic board (2)

922-7001 T10  Hard drive pins (2)	922-8251 T10  Inverter cover (2)	
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